DOCUMENT RESUME

ED 371 003 TM 021 628

AUTHOR Bailey, Nancy; And Others
TITLE Uses of Measurement of Students' Potential for Professional Development in Veterinary Medicine.
PUB DATE Apr 94
NOTE 106p.; Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 4-8, 1994).
PUB TYPE Reports - Research/Technical (143) -- Statistical Data (110) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC05 Plus Postage.
DESCRIPTORS Academic Achievement; Aptitude Tests; *Cognitive Ability; Cognitive Processes; Comparative Analysis; Competence; Databases; Evaluation Methods; *Evaluation Utilization; Higher Education; Minority Groups; Prediction; *Profiles; Scores; *Sex Differences; *Test Use; Veterinarians; *Veterinary Medicine

ABSTRACT

A study was designed in which a battery of 11 selected instruments was given to 320 professional students (four classes) at the University of Illinois College of Veterinary Medicine to measure a variety of parameters of brain function and cognitive ability. Results were to be used to develop ability or competency profiles, to compare scores, to identify abilities and skills that contribute to success, and to build a database of information about students' information-processing skills. The primary conclusion reached after reviewing all the scores is that, in spite of the national concern over a perceived weakness in female performance in the sciences, females in the study population were equal on every measure to their male counterparts, as shown by their average scores. Too little information was available to draw any conclusions about minority students. It was also observed that students' progress in the preclinical portion of the curriculum could be enhanced by students' having a more detailed view of their learning-related abilities and by instructors' understanding and appreciation of the competencies that contribute to academic achievement. Thirty-seven figures illustrate study findings. (Contains 18 references.) (SLD)

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Uses of Measurement of Students' Potential for Professional Development in Veterinary Medicine

ED 371 003

Nancy Bailey, Frank Maglione, Susan Beebe, John Wight

While a need for determining the relevant variables which contribute to professional students' success both in their academic programs and in their professional development has always been present, a variety of factors impacting on veterinary medical educational programs have increased the necessity for understanding what those variables are and how they interact. For example, the national initiative for changing pre-clinical curricula in veterinary professional programs away from an instructional emphasis on rote learning and memorization toward the development of critical thinking and life-long learning skills has engendered an enhanced interest in the identification and matching of students' learning styles with changes in the delivery of the curriculum. Another national initiative in veterinary medical education, aggressive recruitment and proactive programs for retention of minority students into veterinary professional programs makes it necessary to understand more about each individual student's abilities and their relevance to success in the profession. Finally, the dramatic shift in the gender balance of students in the classrooms in veterinary medical professional programs over the last decade has caused veterinary medical educators to wonder whether or not adjustments need to be made to the professional education programs in order to accomodate this change in the demographics of the

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student population.

Other relevant issues include: faculty perception of a decline in the quality of applicants (thought by some to be a result of the recent dramatic shift in the gender balance of the student population from male to female); increase in the average age of veterinary students; the increasing scientific sophistication of curriculum content; and the diversification of opportunities for veterinarians to serve society. (Pritchard 1989) Each of these factors contributes to our need for a better understanding of the complex combination of cognitive and neuropsychological factors which play a role both in students' academic success in our programs as well as in students' long term success at building upon their professional education during a lifetime of career development.

While standard test scores, preveterinary grade point averages, and other elements used in the process of admitting students to veterinary professional programs have long been available for enhancing our understanding of students' abilities, it has become increasingly evident that additional quantitative data which reflect the profile of specific learning related skills and abilities that students bring to veterinary medical education programs would increase veterinary educators' abilities to provide more positive and proactive learning environments.

In 1986, a study was begun to address our need at the University of Illinois College of Veterinary Medicine to have a more precise picture of students' strengths and weaknesses in four broad categories of neuropsychological and cognitive functioning.

It was felt that information acquired from such a study could be a critical component of a developing program designed to address the needs of students who were failing in the curriculum, for analyzing whether or not our admissions process was providing the best possible screening of candidates with potential for long term success in the program and in the profession, and for determining whether or not the impact of a dramatic shift in the demographics of the student body might justify changes in the traditional patterns of curriculum and instruction.

Later it was realized that the information gathered in such a study might also be useful for assessing the potential of our students (selected on the basis of success in undergraduate curricula which largely reward memorization of facts) for adapting to modes of instruction calling for analytical and critical thinking processes and to the necessity for developing the skills for life-long learning beyond the formal academic curriculum.

Given the national climate of change in veterinary medical education and the local need to quantify our understandings about students' specific learning abilities, a study was designed in which a battery of 11 selected instruments was given to 320 (four classes of 80) professional students at the University of Illinois College of Veterinary Medicine for the purpose of measuring a variety of parameters of brain function and cognitive abilities and for using the results: 1) to develop ability or competency profiles of various cohorts of the students tested which would include gender comparisons of students' scores on each instrument by class; 2) to compare the mean scores and the

range of scores of all students on the tests across the full battery of 11 instruments in order to determine whether or not the population of students tested displayed relative strengths and weaknesses; 3) to find and map (if any) the specific aptitudes, abilities, and skills which might contribute to an individual student's success (or lack of it) in the professional program and to use that information as a basis for individual student's academic and career advising; and 4) to build a data base of information about the students' information processing skills sufficient in size to look for patterns or clusters of aptitudes which might be predictive of success in the academic program and in specific career choices.

An additional use for the results of the study which could be construed as relevant to the development of skills and abilities for critical thinking, life-long learning, and adjustment to a rapidly changing economic, social, and cultural environment could be: 5) the identification of relative amounts of *crystalized and fluid learning abilities* represented within the student population. (Lohman 1993)

Since in educational assessment it is not possible to be certain when an individual is using more than one ability when responding to a particular test item or to know the contribution of an individual's background or his or her intrapsychic state at the time of the test to the test's outcome, a wide variety of instruments was included in the test battery. (Engelhard 1988) The competencies revealed by the instruments fell into four categories and were spread throughout the battery. The four categories of cognitive and neuropsychological functioning covered by the instruments used in this study

were *1) verbal and non-verbal reasoning and concept development abilities, 2) psychomotor skills, 3) memory, and 4) attention.* The instruments were administered both just prior to and during students' first semester in the four year professional program.

Methods/Data Source

After completing a pilot study conducted with a group of students who had been selected at random from across the four years of the professional program, 11 instruments for use in constructing profiles of students' abilities were identified for the study and all members of four classes of students beginning with the graduating Class of 1991 (students admitted to the professional program in the fall of 1987) were administered the battery of selected tests. Four of the instruments were given to students individually or in small groups as "paper and pencil" exercises completed during their admissions interview; the remaining seven tests were administered by a clinical neuropsychologist in individual sessions scheduled during the fall semester of each student's first year in the program. As a result of the pilot study the Minnesota Multiphasic Personality Inventory was discarded from the original test battery.

The location within the instruments of the four categories of cognitive and neuropsychological functioning originally sought in the study - *Reasoning/ Verbal and Non-Verbal; Psychomotor Skills; Memory; and Attention* - are indicated in the following descriptions by *italics*.

The instruments used in the study were:

I. Paper and pencil:

A. Miner Vocabulary Test - a baseline vocabulary test consisting of 20 items with four multiple-choice synonyms. Tests *memory* as well as discrimination, ability to generalize, education (timed - 7 minutes);

B. Army General Classification Test - this study utilized only the 50 block counting items from the original test given to over 10 million men involved with the armed services from 1940 -'45. Requires concentration (*attention*), visual/spatial abilities, *(non-verbal reasoning)*, basic math skills, speed, and accuracy (timed -15 minutes);

C. Terman Concept Mastery - Part I: Synonyms and Antonyms - a highly discriminating test of vocabulary and Part II: Analogies - a test of *verbal reasoning* and concept analysis skills. Terman devised this test to retest the subjects who attained scores of 140 and above on the original Stanford-Binet Intelligence test when they were children (untimed);

D. Ravens Progressive Matrices - test consists of progressively complex designs with one piece missing - the correct completion piece is selected from six or eight choices provided. Requires spatial skills, recognition of design, abstract skills, and the ability to recognize numerical and spatial relationships/ *non-verbal reasoning* (timed - 40 minutes);

II. Individually administered:

A. WAIS Digit Span - a test of short term *memory*, *attention span*, ability to concentrate, freedom from distractibility and anxiety. In this test, pairs of numbers in series are given which must be repeated in the same order starting with a series of three digits and working up to nine digits. In addition, seven pairs of the series are repeated in reverse order from that given. Score is the total number of successful trials repeated. (One of six tests on Wechsler Adult Intelligence Scale (WAIS-R) which produce the Verbal IQ) (untimed);

B. WAIS Block Design - a test of ability to organize visual-spatial material using visual-motor integration *(psychomotor skills)* , and visual (*non-verbal*) reasoning, speed, and *attention*. (one of five tests which produce the Wechsler Performance IQ) (timed);

C. Rhythm Test - a subtest of the Seashore tests of Musical Talent; tests alertness, sustained *attention*, short-term auditory *memory*. Consists of 30 pairs of rhythmic beats which must be differentiated from one another as to similarities or differences (untimed);

D. Tactual Performance Test (including *memory*, localization, and dominant, non-dominant, and both hands times) - Used a modification of the Sequin-Goddard form board. Blindfold obscures form board and blocks from test taker. Task includes fitting blocks into the proper space on the board using preferred hand, nonpreferred hand, and both hands. Time is the sum of all three trials. Measures *psychomotor skills* including tactile

form discrimination, kinesthetic ability, manual dexterity, and spatial visualization ability (timed);

E. Halstead Category Test - measures concept formation abilities including postulating hypotheses that appear reasonable with respect to recurring similarities and differences in the stimulus material and testing hypotheses with respect to positive or negative reinforcement; indicates ability to learn in area of nonverbal concept formation. Score represents total number of errors. Provides a measure of *non-verbal reasoning*; *attention,* and ability to learn (timed);

F. Alpha Task - requires subject to recite the alphabet as quickly as possible while putting a successively higher number in front of each letter. It requires the ability to integrate two common lists at the same time with few errors. Measures *memory, attention*, mental agility, accuracy. Score represents number of seconds; adjusted alpha time represents an added penalty by adding 0.5 of the standard deviation of the group time for each error (timed);

E. Subtraction Task - Subject is asked to count down from 100 by sevens until stopped (at 51). Reflects *memory, attention*, speed, accuracy. Errors are added to the time in seconds as with the Alpha Task by adding 0.5 standard deviation of the group time for each error (timed).

(The Category Test, Rhythm Test, and Tactual Perception Test are a part of the Halstead-Reitan Neuropsychological Test Battery.)

In the following chart the same four categories **(Reasoning/Verbal & NonVerbal, Memory, Attention, & Psychomotor Skills)** are shown in relation to the specific instruments which were used to determine the students' competencies in these areas:

	Reason(V)	Reason(NV)	Memory	Attention	PsySkills
Vocabulary:	*Reason (V)*		*Memory*		
Concept Mastery:	*Reason(V)*				
Digit Span:			*Memory*	*Attention*	
Seashore:			*Memory*	*Attention*	
AGCT:		*Reason(NV)*		*Attention*	
Block Design:		*Reason(NV)*		*Attention*	*Psy/Skills*
Category:		*Reason(NV)*		*Attention*	
Ravens:		*Reason(NV)*			
Tactual Percept:			*Memory*		*Psy/Skills*
Alpha/Task:			*Memory*	*Attention*	
Subtr Task:			*Memory*	*Attention*	

Results

During the anaysis of the full complement of data, three additional measures for each of the tested students, undergraduate ("prevet") gpa, score on the Veterinary Aptitude Test (VAT), and the end of the second year gpa (basic sciences coursework in the professional program) were added to the profiles. (Figures 0.0 - 0.1) To date the results of the study have been used: 1) to develop profiles of each classes' raw and converted percent scores on each instrument with gender comparisons; 2) to compare the performance of all students on the 11 different instruments with gender comparisons; 3) to provide feedback to individual students on their test performance for their use in facilitating their success in the curriculum; and 4) as a basis for considering the development of longitudinal studies of the tested students' professional development.

It was hoped that specific individual instruments chosen for the study might stand out as predictive of various kinds of academic performance in the professional program but so far that has not been found to be the case.

Class Profiles/ Gender Comparisons:

Using average raw scores and percent scores, analysis of the full complement of data (scores of students in the classes of 1991, '92, '93, and '94 on all test instruments plus preveterinary gpa, VAT, and end of the 2nd year gpa) shows a high congruence from class to class of female and male students' scores on each measure (Figures 1.0 -2.3); a similar congruence of frequency distributions compared by gender for each

measurement for the entire test population, (Figures 3.0 -3.21); and a virtual congruence of the average raw and converted percent scores of the entire test population on all measures across the four classes (Figures 4.0 - 4.1).

Whole Population Profile/Gender Comparisons:

Using averages of both raw scores and percent scores for each measure, comparison of the genders across the entire population shows a very high congruence of performance for females and males on each of the instruments administered in the study as well as on the two grade point averages included in the data and on the VAT (Figures 5.0 - 5.1).

Multiple Instrument Comparison:

A comparison of the range and average scores of all students using percent scores for the 11 different instruments shows that with the exception of verbal reasoning abilities as demonstrated by their scores on the Terman Concept Mastery, both male and female students display high abilities in non-verbal reasoning, memory, attention, and psychomotor skills. At this point, there is no immediately obvious explanation for the pervasive low performance of students of both genders in all four class cohorts on the Terman Concept Mastery compared to their performance on other instruments (Figures 6.0 - 6.2) and no way of knowing whether or not another measure of verbal reasoning would produce a different performance profile on this competency.
It is possible, however, that the Terman Concept Mastery instrument suffers from the same shortcomings as the SAT which has been shown to measure cultural advantage

rather than ability. (Fish 1993)

When the Terman scores (both male and female) are compared to the students' grade point averages, both prevet and professional, their performance on the non-verbal reasoning measures (AGCT, Block Design, Category, and Ravens Progressive Matrices), and the Tactual Perception Test, it does seem clear that overall the admissions process used at the University of Illinois College of Veterinary Medicine selects for students whose strengths lie in the areas of nonverbal reasoning and psychomotor skills and that introduction of curricular content calling for high levels of verbal reasoning would have to be done with a great deal of support for students who were admitted to the professional program using the same criteria as was used to select the test population.

The data, therefore, may be suggesting that there is a necessity to search for an additional admissions criteria which would select for students with more strength in the area of verbal conceptual analysis. This issue is relevant to attempts to move the basic sciences portion (first two years) of the program away from an instructional emphasis on rote learning and toward the introduction of concept analysis and problem-solving exercises.

Feedback to Individual Students:

Each year at the end of the testing cycle (when all students in a class had been tested and their scores recorded), the students met as a class and were given their individual

profiles, the total number of possible points for each instrument, the mean and range test scores for their class, and information on how to understand and use their personal profiles for enhancing their learning experiences in the program. For example, students whose Tactual Perception, AGCT, and Block Design scores were high relative to their Vocabulary, Digit Span, and Seashore could expect to be more comfortable using their spatial reasoning competencies and experiencing hands-on learning in the clinical portion of the curriculum than they would be in the more abstract, verbally based lecture courses.

As a result of learning the outcome of their performances on the study instruments, students were encouraged to minimize concern about moderate performance in courses which challenged areas in which they were relatively weak (e.g., if their low grades in surgery courses corresponded to low performance on the Tactual Perception Location and Block Design tests), to approach studying differently on the basis of their relative strengths and weaknesses (e.g., audio taping of lectures for future reference if scores of auditory memory and attention on the Seashore and Digit Span were low), and to anticipate good performance in courses which related to their strengths.

As the testing progressed over the four years of the study, two students were counseled out of the professional program on the basis of both their performance in the curriculum and their test score profiles and in several instances reluctant faculty were persuaded to give students an opportunity for reexamination (using a different

testing methodology) in failed courses on the basis of the students' strong performances on relevant study instruments.

In the cases where faculty were persuaded to give students reexaminations using alternate means of evaluation, the ability to quantify the student's learning abilities independent of their scores on prior course examinations provided a quantitative basis for making decisions about how best to proceed in supporting those students' professional development. (In one case, a student who was a participant in a special access program for minority students was retested and retained on the basis of her test scores which were all above the averages for her class). See Figures 7.0 - 7.3 for examples of individual ability profiles.

Longitudinal Studies: Our intention is to begin in 1996 with a "five year out" review of the career status of the Class of 1991 and to continue collecting relevant career information on members of the four classes at regular intervals. The concept of learning abilities located along a continuum of crystallized to fluid abilities as first described in Cattell's (1963) work is very relevant to the necessary changes away from veterinary medical curricula which emphasize rote learning in the basic science (pre-clinical) portion of the program toward the development of preclinical courses which foster problem-solving skills and life-long learning attitudes among an increasingly diverse cohort of veterinary students. (Lohman 1993) For example, it would be especially interesting to determine whether or not there is a relationship between male and female students' scores along the crystallized/fluid ability continuum and

their development as leaders in the profession.

Since the instruments used in this study could be categorized in a range from tests of crystallized abilities to assessments of fluid abilities, we may have an opportunity to see where the tested students' strengths and weaknesses lie along this continuum. Crystallized abilities are measured by tests which have little or no informational content but require the ability to see relationships (e.g., Ravens Progressive Matrices); fluid abilities are measured by tests of acquired knowledge such as vocabulary. (Goldstein 1990)

At present the plan for the longitudinal study is that the scores on the Terman Concept Mastery/Synonyms and Antonyms and the Miner Vocabulary would be used as measurements of crystallized abilities and the scores on the Terman Concept Mastery/ Analogies, Halstead Category, and Ravens Progressive Matrices as measures of fluid abilities.

Conclusions

The primary conclusion reached after reviewing all of the scores generated by the study is that in spite of the national concern for a perceived weakness in female performance in the sciences, as reflected by their average scores, female students in the population tested were equal on every measure to their male counterparts. Since veterinary medicine is essentially an applied biomedical science, this finding is an important response to those teaching faculty who felt that the influx of women students

into the professional program was causing a significant decline in the quality of the profession. This finding is also significant in light of the lower overall average salaries of women veterinarians which some have cited as proof of the weaker abilities of women to be veterinarians.

The number of minority students participating in the study was too small (7) to make a similar statement about that cohort of students. However it could be hypothesized on the basis of the one case cited that the scores of minority students who have been admitted to veterinary medical professional programs would not be significantly different than the average of the entire population.

During the course of the study it was observed that individual student's progress in the pre-clinical portion of the professional curriculum could be enhanced by students' having a more detailed view of their learning-related abilities as measured by the study instruments and by instructors' understanding and appreciation of the complex matrix of competencies which contribute to an individual's academic achievement.

These findings are important to the veterinary medical profession because its educational programs, the sole source of new professionals, have the responsibility to meet the needs of a rapidly changing society by educating a diverse group of veterinarians who can successfully adapt and enlarge their fund of knowledge and skills in order to continue to serve society long after graduation. As the diversity of the student population increases at a faster rate than the diversity of the teaching faculty,

information used in making decisions about individual student's potential for success in the curriculum and in the profession must be based on more than the intuition or previous experience of the instructor.

With the rising costs of professional education, the increased time spent in pre-professional educational preparation, the unknowns introduced by the changing demographics of the student body, and the need of the profession for developing life-long learners, "life experience" and trial and error learning are no longer acceptable as the sole sources of information available to students' for discovering their potential for success in professional academic programs and in their veterinary careers.

In addition, the results of measurements of students' cognitive and neuropsychological aptitudes made in this study have enhanced our ability to understand the impact of the influx of women into the professional programs in terms of their abilities on a variety of relevant learning competencies, to provide a more positive professional learning environment based on those understandings, and to develop a professional program which can attempt to meet students' actual rather than perceived needs.

Finally, it is anticipated that these results will also provide an important baseline from which to develop longitudinal studies of participants' career trajectories, patterns of commitment to life-long learning, long term professional adaptation to social and economic change, and commitment to their professional development as veterinarians.

Bibliography

Bruner, Jerome S. /Anglin, Jeremy M. Editor. (1973). *Beyond the Information Given: Studies in the Psychology of Knowing.* W. W. Norton & Co., Inc.: New York

Ibid. *The Process of Concept Attainment.* pp. 131-157
Ibid. *Reception Strategies in Concept Attainment.* pp.160-185

Englehard, George, Jr. (1988) *Thorndike's and Wood's Principles of Eudcational Measurement: A View From the 1980's.* Paper presentation at 1988 AERA Annual Meeting

Fish, Stanley (1993) *Affirmative Action and the SAT.* The Journal of Blacks in Higher Education, No. 2. Winter, 1993/94

Gardner, Howard (1985). *Frames of Mind: The Theory of Multiple Intelligences.* Basic Books: New York

Gardner, Howard (1993). *Multiple Intelligences: The Theory in Practice.* Basic Books: New York

Goldstein, Gerald & Herson, Michel, ed. (1990). *Handbook of Psychological Assessment.* Permagon Press: New York

Lohman, David F. (October, 1993). *Teaching and Testing to Develop Fluid Abilities.* Educational Researcher, Vol. 22, No. 7, pp. 12-22

Paul, R. W. & R. B. Wilson (Fall 1993). *Critical Thinking: The Key to Veterinary Educational Reform.* Journal of Veterinary Medical Education, Vol. 20, No. 2, pp. 34-36

Polanyi, Michael (1983). *The Tacit Dimension.* Peter Smith: Gloucester, Mass

Pritchard, William, ed. (1989) *Future Directions for Veterinary Medicine.* PEW National Veterinary Education Program, Duke University: Durham, North Carolina

Reitan, Ralph M. and Wolfson, Deborah (1985), *The Halstead-Reitan Neuropsychological Test Battery: Theory and Clinical Interpretation.* Neuropsychology Press: Tuscon, Arizona

Taylor, Ronald L. (1984). *Assessment of Exceptional Students: Educational and Psychological Procedures.* Prentice-Hall, Inc: Englewood Cliffs, New Jersey

Terman, Lewis M. (1975). *The Measurement of Intelligence/ Classics in Child Development.* Arno Press: New York

Tyler, Ralph and Wolf, Richard M. (1974) *Crucial Issues in Testing.* McCutchan Publishing Corporation: Berkeley, Calif.

Wiggins, Grant (1993) *Assessment: Authenticity, Context, and Validity.* Phi Delta Kappan, Vol. 75, No. 3 pp. 200-214

Wise, J. Karl (1988-1994) *The Information Exchange/Employment of Male and Female graduates of US Veterinary Medical Colleges.* Journal of the American Veterinary Medical Association, Vol. 204, No. 2

Range, Average, and Standard Deviation

of Raw Scores - All Students

Raw Scores			Vst	Uggpa	Voc	Cm/s	Cm/a	Cm/t	Ds	Ss	Agct	Bd	Cst	Rev	Tpt/t	Tpt/m	Tpt/f	Alt/t	Alt/err	Alt/adj	Sub/t	Sub/err	Sub/adj	GPAY2
All Classes		High	99 000	5 000	19 000	80 000	62 000	131 000	27 000	30 000	49 000	51 000	72 000	19 000	31 800	10 000	10 000	127 000	6 000	157 300	152 000	5 000	200 380	5 000
		Low	12 000	3 468	6 000	3 000	1 000	0 000	1 000	20 000	18 000	21 000	5 000	0 000	4 100	5 000	0 000	21 000	0 000	21 000	5 000	0 000	5 000	3 068
		Mean	79 197	4 404	13 018	32 522	33 702	65 803	17 631	27 828	38 000	41 847	18 987	5 125	10 480	5 447	5 038	45 047	0 738	51 358	23 754	0 718	32 416	4 109
		St Dev	17 058	0 308	2 317	14 153	9 193	22 075	3 798	1 847	4 881	5 934	11 429	3 568	3 965	0 999	2 230	14 798	1 079	20 928	15 980	0 951	24 709	0 430
Class of 91	F	High	99 000	5 000	18 000	70 000	62 000	130 000	25 000	30 000	46 000	50 000	47 000	11 000	31 800	10 000	10 000	127 000	6 000	152 650	152 000	4 000	200 380	4 818
		Low	30 000	3 826	9 000	6 000	20 000	31 000	10 000	20 000	25 000	24 000	5 000	0 000	4 900	6 000	0 000	26 000	0 000	26 000	9 000	0 000	9 000	3 068
		Mean	78 198	4 449	13 133	33 111	34 089	67 200	17 152	27 717	36 378	40 852	20 787	3 778	10 880	5 565	5 436	46 328	0 781	52 832	29 809	0 870	40 128	4 009
		St Dev	20 177	0 298	2 456	16 383	9 045	24 226	3 445	2 123	4 715	7 337	10 557	2 997	4 531	0 970	2 420	17 805	1 164	25 527	22 402	1 055	31 649	0 403
	M	High	99 000	4 958	17 000	56 000	50 000	106 000	24 000	30 000	47 000	51 000	63 000	14 000	18 300	10 000	10 000	78 000	2 000	86 550	58 000	2 000	70 095	4 958
		Low	15 000	4 012	6 000	9 000	1 000	31 000	9 000	24 000	28 000	29 000	6 000	0 000	6 400	7 000	3 000	26 000	0 000	26 000	7 000	0 000	7 000	3 197
		Mean	75 516	4 478	11 936	24 958	30 845	55 813	17 813	27 971	38 936	41 032	21 742	4 290	10 030	5 516	7 032	44 129	0 484	48 266	19 419	0 645	27 223	4 080
		St Dev	22 503	0 286	2 082	10 082	9 125	16 749	3 489	1 519	3 959	5 088	14 783	3 185	3 201	0 6/6	1 713	13 117	0 713	17 103	10 678	0 898	16 878	0 482
	Overall	High	99 000	5 000	18 000	70 000	62 000	130 000	25 000	30 000	47 000	51 000	63 000	14 000	31 800	10 000	10 000	127 000	6 000	152 650	152 000	4 000	200 380	4 959
		Low	15 000	3 826	6 000	6 000	1 000	31 000	9 000	20 000	25 000	24 000	5 000	0 000	4 900	6 000	0 000	26 000	0 000	26 000	7 000	0 000	7 000	3 068
		Mean	75 922	4 480	12 645	29 798	32 684	62 474	17 338	27 779	37 421	40 805	21 187	3 987	10 408	5 545	6 875	45 442	0 649	50 994	25 508	0 779	34 931	4 039
		St Dev	21 147	0 290	2 377	14 711	9 234	21 838	3 470	1 904	4 588	6 725	12 409	3 028	4 060	0 961	2 183	16 118	1 016	22 629	19 253	0 936	27 374	0 440
Class of 92	F	High	99 000	5 000	18 000	85 000	58 000	113 000	27 000	30 000	46 000	49 000	72 000	19 000	31 700	10 000	9 000	102 000	5 000	110 550	88 000	4 000	136 380	5 000
		Low	50 000	3 908	9 000	6 000	20 000	41 000	9 000	22 000	18 000	29 000	8 000	0 000	5 700	5 000	1 000	28 000	0 000	28 000	6 000	0 000	6 000	3 378
		Mean	83 000	4 388	13 771	36 250	34 917	71 167	17 313	28 021	36 875	40 458	20 604	5 104	11 440	5 083	5 500	44 723	0 702	50 727	27 617	0 979	39 455	4 329
		St Dev	12 847	0 322	2 201	13 553	8 558	20 195	3 841	1 797	5 357	5 334	13 532	4 219	4 505	1 256	2 227	12 948	1 008	17 835	18 795	1 138	28 176	0 424
	M	High	99 000	5 000	18 000	80 000	58 000	120 000	25 000	30 000	48 000	51 000	65 000	18 000	20 900	10 000	10 000	73 000	3 000	96 650	47 000	2 000	71 180	4 872
		Low	40 000	3 780	7 000	3 000	14 000	17 000	10 000	22 000	30 000	26 000	5 000	0 000	4 100	6 000	2 000	21 000	0 000	21 000	7 000	0 000	7 000	3 230
		Mean	81 457	4 364	12 679	30 121	34 939	65 061	18 229	27 886	38 424	42 400	18 400	4 979	9 526	5 514	5 914	45 030	0 979	52 544	18 970	0 578	25 933	3 995
		St Dev	12 129	0 338	2 319	14 086	11 087	23 718	3 650	1 703	4 250	5 389	10 502	3 180	3 512	0 937	1 982	11 878	1 037	18 089	9 536	0 740	15 807	0 389
	Overall	High	99 000	5 000	18 000	85 000	58 000	120 000	27 000	30 000	49 000	51 000	72 000	19 000	31 700	10 000	10 000	102 000	5 000	110 550	88 000	4 000	136 380	5 000
		Low	40 000	3 780	7 000	3 000	14 000	17 000	9 000	22 000	18 000	26 000	5 000	0 000	4 100	5 000	1 000	21 000	0 000	21 000	6 000	0 000	6 000	3 230
		Mean	82 348	4 381	13 407	33 753	34 926	68 679	17 880	27 984	37 914	41 277	18 831	5 012	10 833	5 265	5 675	44 850	0 775	51 478	24 060	0 813	33 877	4 175
		St Dev	12 572	0 329	2 292	14 080	9 858	21 907	3 788	1 758	5 082	5 443	12 519	3 825	4 223	1 152	2 129	12 440	1 024	17 163	14 878	1 014	24 774	0 433
Class of 93	F	High	99 000	5 000	19 000	80 000	62 000	130 000	25 000	30 000	47 000	51 000	47 000	18 000	20 293	10 000	10 000	97 000	6 000	147 300	71 000	5 000	110 380	4 959
		Low	44 000	3 884	10 000	6 000	19 000	33 000	10 000	21 000	30 000	24 000	6 000	0 000	4 417	6 000	1 000	24 000	0 000	24 000	6 000	0 000	6 000	3 257
		Mean	78 519	4 433	13 642	34 580	32 680	67 260	17 717	27 756	36 673	41 170	18 712	5 720	10 721	5 377	5 586	43 868	0 823	48 192	25 321	0 887	36 047	4 120
		St Dev	16 803	0 274	2 233	14 508	9 343	21 991	3 584	2 027	4 614	5 745	9 132	3 408	3 051	1 050	2 253	15 424	1 050	22 033	14 432	1 178	25 884	0 464
	M	High	99 000	4 947	18 000	77 000	54 000	131 000	25 000	30 000	48 000	49 000	47 000	14 000	29 033	10 000	10 000	95 000	5 000	112 100	129 000	4 000	177 380	4 808
		Low	45 000	3 674	8 000	3 000	20 000	23 000	10 000	24 000	26 000	36 000	5 000	2 000	4 667	6 000	1 000	25 000	0 000	27 000	5 000	0 000	5 000	3 197
		Mean	81 074	4 388	12 444	32 074	33 704	65 778	17 889	27 889	36 037	43 111	19 908	5 815	11 110	5 481	5 652	48 444	1 111	57 844	20 852	0 593	29 019	3 902
		St Dev	13 936	0 345	2 200	15 473	8 436	22 675	3 500	1 489	4 807	3 886	11 021	2 816	5 243	0 967	2 520	16 406	1 133	22 152	22 201	0 872	31 316	0 309
	Overall	High	99 000	5 000	19 000	80 000	62 000	131 000	25 000	30 000	47 000	51 000	47 000	18 000	29 033	10 000	10 000	97 000	6 000	147 300	129 000	5 000	177 380	4 959
		Low	44 000	3 674	8 000	3 000	19 000	23 000	10 000	21 000	26 000	24 000	5 000	0 000	4 417	6 000	1 000	24 000	0 000	24 000	5 000	0 000	5 000	3 197
		Mean	79 382	4 412	13 238	33 701	33 039	66 740	17 775	27 800	37 481	41 625	19 077	5 753	10 853	5 413	5 663	46 413	0 788	52 148	23 813	0 788	33 337	4 048
		St Dev	15 788	0 302	2 293	14 901	9 049	22 316	3 557	1 867	4 882	5 227	9 818	3 212	3 934	1 021	2 350	15 910	1 103	22 458	17 573	1 092	28 082	0 431
Class of 94	F	High	99 000	4 889	17 000	68 000	53 000	112 000	26 000	30 000	45 000	51 000	53 000	18 000	21 780	10 000	10 000	108 000	6 000	157 300	68 000	3 000	76 285	5 000
		Low	33 000	3 488	8 000	7 000	19 000	0 000	1 000	23 000	26 000	21 000	7 000	1 000	5 080	6 000	1 000	25 000	0 000	25 000	7 300	0 000	7 300	3 355
		Mean	78 585	4 423	13 000	33 045	34 614	64 717	17 130	27 813	36 956	43 022	18 830	5 711	9 757	5 530	6 000	42 328	0 738	48 646	21 702	0 500	27 750	4 188
		St Dev	14 729	0 296	2 022	11 352	8 084	22 030	4 883	1 705	3 789	6 887	8 349	3 387	3 427	0 817	2 197	13 758	1 293	22 348	10 161	0 715	16 731	0 384
	M	High	98 000	4 957	18 000	80 000	48 500	103 500	24 000	30 000	47 000	51 000	55 000	17 000	18 510	10 000	10 000	110 000	3 000	127 100	57 000	2 000	87 190	4 961
		Low	12 000	3 719	8 000	9 000	13 000	25 000	10 000	22 000	31 000	31 000	8 000	0 000	4 166	6 000	2 000	30 000	0 000	30 000	7 800	0 000	7 800	3 466
		Mean	79 324	4 342	12 412	32 353	33 382	65 735	18 471	27 558	36 441	44 059	18 708	5 735	10 379	5 500	6 412	47 441	0 735	53 729	21 729	0 471	27 421	4 183
		St Dev	20 236	0 312	2 415	13 705	9 224	21 188	3 550	2 017	4 202	4 877	12 172	4 307	3 894	0 978	1 942	14 870	0 949	18 730	11 464	0 808	15 641	0 425
	Overall	High	99 000	4 957	18 000	80 000	53 000	112 000	26 000	30 000	47 000	51 000	55 000	17 000	21 780	10 000	10 000	110 000	6 000	157 300	57 000	3 000	76 285	5 000
		Low	12 000	3 488	8 000	7 000	13 000	0 000	1 000	22 000	26 000	21 000	8 000	0 000	4 166	6 000	1 000	25 000	0 000	25 000	7 300	0 000	7 300	3 355
		Mean	78 899	4 386	12 747	32 744	34 077	65 150	17 700	27 783	36 185	43 463	18 938	5 722	10 021	5 575	6 175	44 500	0 738	50 908	21 714	0 488	27 610	4 186
		St Dev	17 290	0 308	2 219	12 437	8 611	21 882	4 297	1 852	3 979	5 838	10 264	3 815	3 558	0 891	2 066	14 483	1 159	21 038	10 734	0 671	16 238	0 392

Figure 0.0

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Range, Average, and Standard Deviation

of Percent Scores - All Students

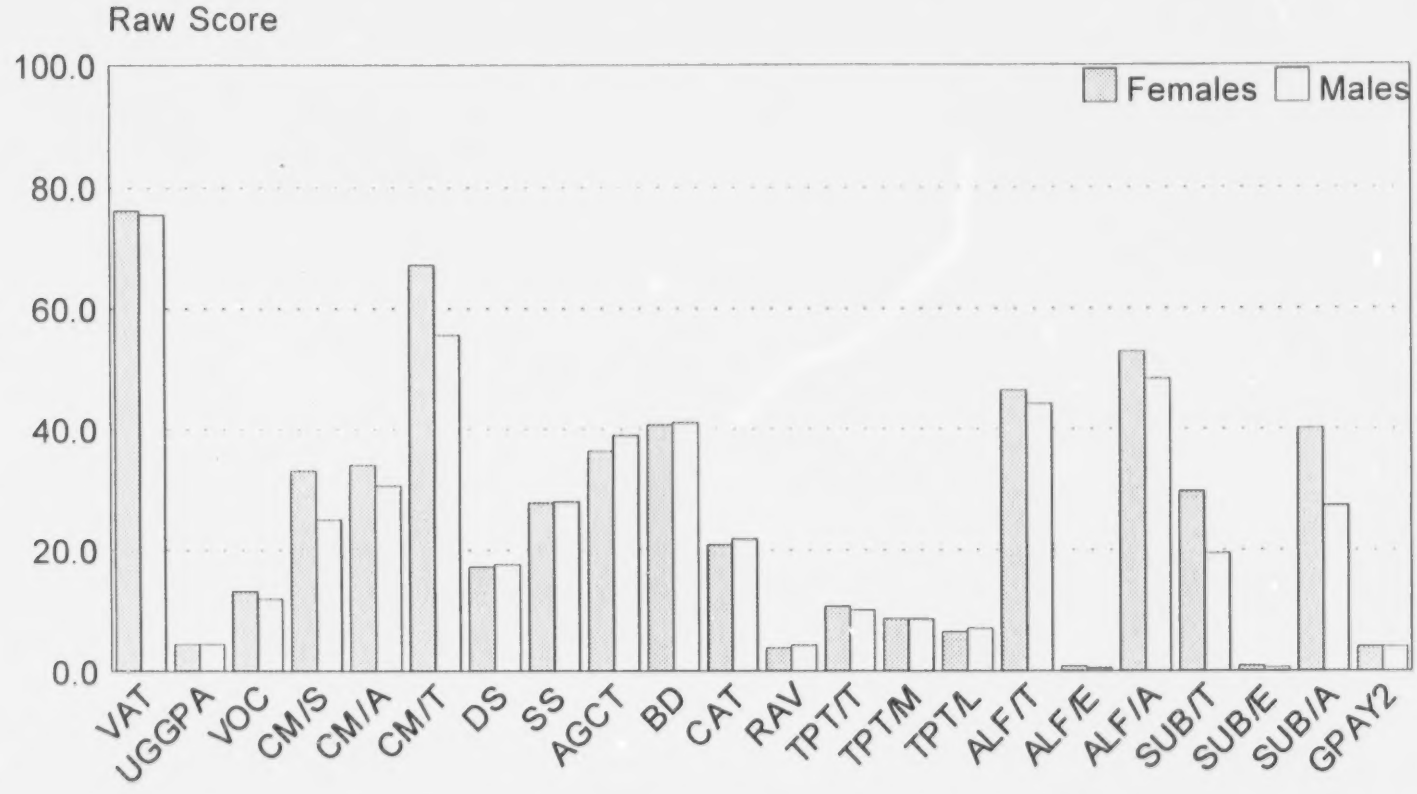
Percent Scores			Vst	Uggpa	Voc	Cm/s	Cm/a	Cm/t	Ds	Ss	Agct	Bd	Cat	Rev	Tpt/t	Tpt/m	Tpt/l	Alt/t	Alt/er	Alt/adj	Sub/t	Sub/er	Sub/adj	GPAY2
All Classes		High	100 000	100 000	95 000	89 565	82 667	88 947	96 429	100 000	98 000	100 000	97 596	100 000	93 187	100 000	100 000	88 333	100 000	96 636	97 222	100 000	98 111	100 000
		Low	12 121	66 360	30 000	2 609	1 333	0 000	3 571	66 667	36 000	41 176	65 385	66 333	47 000	50 000	0 000	29 444	66 462	74 816	15 556	28 571	24 286	61 311
		Mean	79 979	66 164	64 964	28 282	44 823	34 612	62 853	82 748	75 981	81 980	80 800	91 410	82 425	84 389	60 188	74 865	96 588	91 780	86 835	89 829	87 792	82 192
		St Dev	17 282	6 156	11 648	12 233	12 233	11 554	13 580	8 151	9 331	11 773	5 633	5 066	9 861	10 087	22 479	8 229	2 074	3 356	8 877	13 610	9 354	8 610
Class of 91	F	High	100 000	100 000	90 000	60 870	62 667	66 421	89 286	100 000	92 000	96 039	97 596	100 000	92 000	100 000	100 000	85 556	100 000	95 837	95 000	100 000	96 599	96 356
		Low	30 303	76 520	45 000	6 957	26 667	16 316	35 714	66 667	50 000	47 059	77 404	81 667	47 000	60 000	0 000	29 444	66 462	75 560	15 556	42 857	24 286	61 311
		Mean	76 965	66 960	65 667	29 792	45 452	35 368	61 256	82 391	72 756	79 710	80 008	93 704	82 234	85 652	64 348	74 263	96 537	91 542	83 551	87 578	84 839	80 176
		St Dev	20 381	5 775	12 275	14 248	12 080	12 752	12 304	7 077	9 431	14 397	5 075	4 829	7 552	9 703	24 196	9 991	2 239	4 087	12 446	15 074	11 920	8 059
	M	High	100 000	99 180	85 000	48 696	66 667	55 789	85 714	100 000	94 000	100 000	97 115	100 000	91 000	100 000	100 000	85 556	100 000	95 837	96 111	100 000	97 355	99 189
		Low	15 152	80 240	30 000	7 826	1 333	16 316	32 143	80 000	56 000	56 863	69 712	76 667	69 500	70 000	30 000	58 667	96 154	96 143	67 778	71 429	73 515	63 944
		Mean	76 279	89 518	59 677	21 711	40 860	29 270	62 903	92 903	77 871	80 455	89 547	92 849	83 284	85 161	70 323	75 484	99 068	92 272	89 211	90 783	88 714	81 591
		St Dev	22 730	5 329	10 312	6 767	12 166	8 299	12 461	5 082	7 916	11 153	7 097	5 308	5 334	6 659	17 130	7 287	1 370	2 736	5 931	9 869	6 377	9 835
	Overall	High	100 000	100 000	90 000	60 870	62 667	66 421	89 286	100 000	94 000	100 000	97 596	100 000	92 000	100 000	100 000	85 556	100 000	95 837	96 111	100 000	97 355	99 189
		Low	15 152	76 520	30 000	6 957	1 333	16 316	32 143	66 667	50 000	47 059	69 712	76 667	47 000	60 000	0 000	29 444	66 462	75 560	15 556	42 857	24 286	61 311
		Mean	76 589	89 193	63 224	25 904	43 579	32 691	61 920	92 597	74 842	80 010	89 824	93 355	82 658	85 455	66 753	74 755	96 761	91 836	85 830	88 868	86 801	80 777
		St Dev	21 380	5 808	11 885	12 782	12 312	11 545	12 383	6 348	8 195	13 186	5 984	5 047	6 767	8 611	21 829	9 955	1 954	3 623	10 896	13 350	10 343	8 791
Class of 92	F	High	100 000	100 000	90 000	56 522	74 667	58 474	96 429	100 000	92 000	96 078	97 115	100 000	90 500	100 000	80 000	84 444	100 000	95 517	96 667	100 000	97 733	100 000
		Low	50 505	78 180	45 000	5 217	26 667	21 579	32 143	73 333	36 000	56 863	65 385	66 333	47 167	50 000	10 000	43 333	90 385	82 301	51 111	42 857	48 470	67 566
		Mean	84 112	87 531	68 438	31 993	46 583	37 752	81 384	93 403	73 625	78 678	89 653	91 285	80 326	80 417	63 333	75 201	96 650	91 892	85 047	88 626	85 552	86 571
		St Dev	13 473	6 883	11 509	11 447	11 380	10 366	13 890	5 912	10 851	11 147	7 144	7 235	7 763	12 943	22 943	7 191	1 940	2 940	9 465	16 614	10 845	9 483
	M	High	96 980	100 000	90 000	59 130	78 667	63 158	89 286	100 000	96 000	100 000	97 596	100 000	93 187	100 000	100 000	88 333	100 000	96 636	96 111	100 000	97 355	83 433
		Low	40 404	78 140	35 000	2 609	18 667	6 947	35 714	73 333	60 000	64 902	66 750	73 333	65 167	60 000	20 000	59 444	84 231	84 206	73 889	71 429	73 101	64 789
		Mean	81 788	87 429	64 083	25 435	46 083	33 586	64 706	82 843	78 938	83 218	92 110	91 710	84 015	85 000	66 708	74 826	96 377	91 590	89 288	91 618	90 001	79 865
		St Dev	12 085	6 661	11 621	11 634	14 704	12 103	13 015	5 724	9 817	10 710	5 123	5 278	5 903	9 471	19 627	6 527	1 989	2 817	5 297	10 630	5 955	7 502
	Overall	High	100 000	100 000	90 000	59 130	78 667	63 158	96 429	100 000	98 000	100 000	97 596	100 000	93 187	100 000	100 000	88 333	100 000	96 636	96 667	100 000	97 733	100 000
		Low	40 404	78 140	35 000	2 609	18 667	6 947	32 143	73 333	36 000	64 902	66 385	66 333	47 167	50 000	10 000	43 333	90 385	82 301	51 111	42 857	48 470	64 789
		Mean	83 149	87 488	66 888	29 370	46 383	36 086	82 781	93 171	75 750	80 580	90 672	91 458	81 856	82 317	65 978	75 049	96 539	91 770	86 765	89 808	87 354	83 642
		St Dev	12 998	6 636	11 751	11 862	12 616	11 280	13 514	5 841	10 224	11 194	6 498	6 527	7 282	11 822	21 857	8 832	1 984	2 788	8 304	14 622	9 439	8 719
Class of 93	F	High	100 000	100 000	95 000	89 565	82 667	88 421	89 286	100 000	94 000	100 000	97 115	100 000	92 636	100 000	100 000	88 667	100 000	96 158	97 222	100 000	98 111	99 189
		Low	44 444	79 280	50 000	6 957	25 333	17 368	35 714	70 000	60 000	47 059	77 404	73 333	66 195	60 000	10 000	46 111	88 462	78 417	60 556	28 571	58 294	65 143
		Mean	79 312	86 899	88 206	30 070	43 573	36 400	83 275	92 516	73 348	80 725	91 004	90 467	82 131	83 774	55 880	75 829	98 803	92 124	85 933	87 332	86 380	82 402
		St Dev	16 771	5 487	11 163	12 616	12 456	11 574	12 900	6 757	9 027	11 265	4 380	5 677	5 085	10 502	22 530	8 589	2 020	3 527	9 018	16 903	9 773	9 275
	M	High	100 000	96 940	90 000	86 957	72 000	66 947	89 286	100 000	92 000	96 078	97 596	96 667	92 388	100 000	100 000	86 111	100 000	95 877	97 222	100 000	98 111	92 162
		Low	45 455	73 480	40 000	2 609	26 667	12 105	35 714	80 000	56 000	70 588	77 404	76 667	53 278	80 000	10 000	47 222	90 385	82 053	28 333	42 857	32 978	63 944
		Mean	81 893	87 387	62 222	27 990	44 838	34 620	63 869	92 963	76 074	84 532	90 477	90 309	81 483	84 815	68 519	73 086	97 863	90 723	88 418	91 534	89 413	78 049
		St Dev	14 077	6 906	10 998	13 454	11 248	12 040	12 486	4 997	9 213	7 245	5 298	4 883	8 736	9 572	25 196	9 114	2 179	3 547	12 334	12 454	11 832	6 181
	Overall	High	100 000	100 000	95 000	89 565	82 667	88 947	89 286	100 000	94 000	100 000	97 596	100 000	92 636	100 000	100 000	86 667	100 000	96 158	97 222	100 000	98 111	99 189
		Low	44 444	73 480	40 000	2 609	25 333	12 105	35 714	70 000	56 000	47 059	77 404	73 333	53 278	80 000	10 000	46 111	88 462	78 417	28 333	28 571	32 978	63 944
		Mean	80 194	86 231	66 188	29 305	44 052	35 126	63 462	92 887	74 982	82 010	90 829	90 411	81 912	84 125	66 825	74 771	96 486	91 651	86 771	88 750	87 404	80 951
		St Dev	15 948	6 041	11 463	12 958	12 066	11 745	12 702	6 223	9 364	10 249	4 719	5 353	6 557	10 210	23 602	8 539	2 122	3 596	9 763	15 599	10 610	8 620
Class of 94	F	High	100 000	97 780	85 000	51 304	70 667	58 947	92 857	100 000	90 000	100 000	96 635	96 333	91 587	100 000	100 000	88 111	100 000	95 997	95 944	100 000	97 242	100 000
		Low	33 333	80 360	40 000	6 087	25 333	0 000	3 571	76 667	52 000	41 176	74 519	73 333	63 733	80 000	10 000	41 111	88 462	74 816	68 889	57 143	71 178	67 105
		Mean	79 358	86 453	66 000	28 736	46 152	34 062	61 180	93 043	77 911	84 356	92 495	90 481	83 736	86 304	60 000	76 486	96 579	92 212	87 943	92 857	89 515	83 764
		St Dev	14 878	5 926	10 111	9 871	10 752	11 595	16 782	5 662	7 877	13 112	4 014	5 661	5 712	9 172	21 889	7 842	2 486	3 678	5 845	10 211	8 322	7 275
	M	High	96 980	99 140	90 000	52 174	84 667	84 474	85 714	100 000	94 000	100 000	97 115	100 000	93 057	100 000	100 000	83 333	100 000	95 197	95 667	100 000	97 053	99 221
		Low	12 121	74 380	40 000	7 826	17 333	13 158	35 714	73 333	62 000	60 784	73 558	71 667	66 150	60 000	20 000	36 889	84 231	79 651	68 333	71 429	74 613	69 315
		Mean	80 125	86 845	62 059	28 133	44 510	34 598	65 986	91 963	78 862	86 380	91 007	90 441	82 702	85 000	64 118	73 644	96 586	91 396	87 829	89 277	89 639	83 658
		St Dev	20 442	6 242	12 073	11 917	12 296	11 151	12 679	6 725	8 404	9 172	5 952	7 178	6 158	9 777	19 421	8 261	1 825	2 998	8 369	9 852	5 872	8 498
	Overall	High	100 000	99 140	90 000	52 174	70 667	58 947	92 857	100 000	94 000	100 000	97 115	100 000	93 057	100 000	100 000	88 111	100 000	95 997	95 944	100 000	97 242	100 000
		Low	12 121	66 360	40 000	6 087	17 333	0 000	3 571	73 333	52 000	41 176	73 558	71 667	63 733	80 000	10 000	36 889	88 462	74 816	68 333	57 143	71 178	67 105
		Mean	79 884	87 720	63 734	28 473	45 436	34 299	63 214	92 642	78 329	85 221	91 857	90 464	83 298	85 760	61 760	76 278	96 582	91 866	87 837	93 036	89 568	83 718
		St Dev	17 486	6 124	11 094	10 815	11 481	11 412	15 345	6 174	7 958	11 645	4 836	6 359	5 927	8 913	20 963	8 035	2 229	3 368	5 983	9 581	6 135	7 830

Figure 0.1

BEST COPY AVAILABLE

Comparison of Gender Average Scores

Within Each Instrument - Class of '91



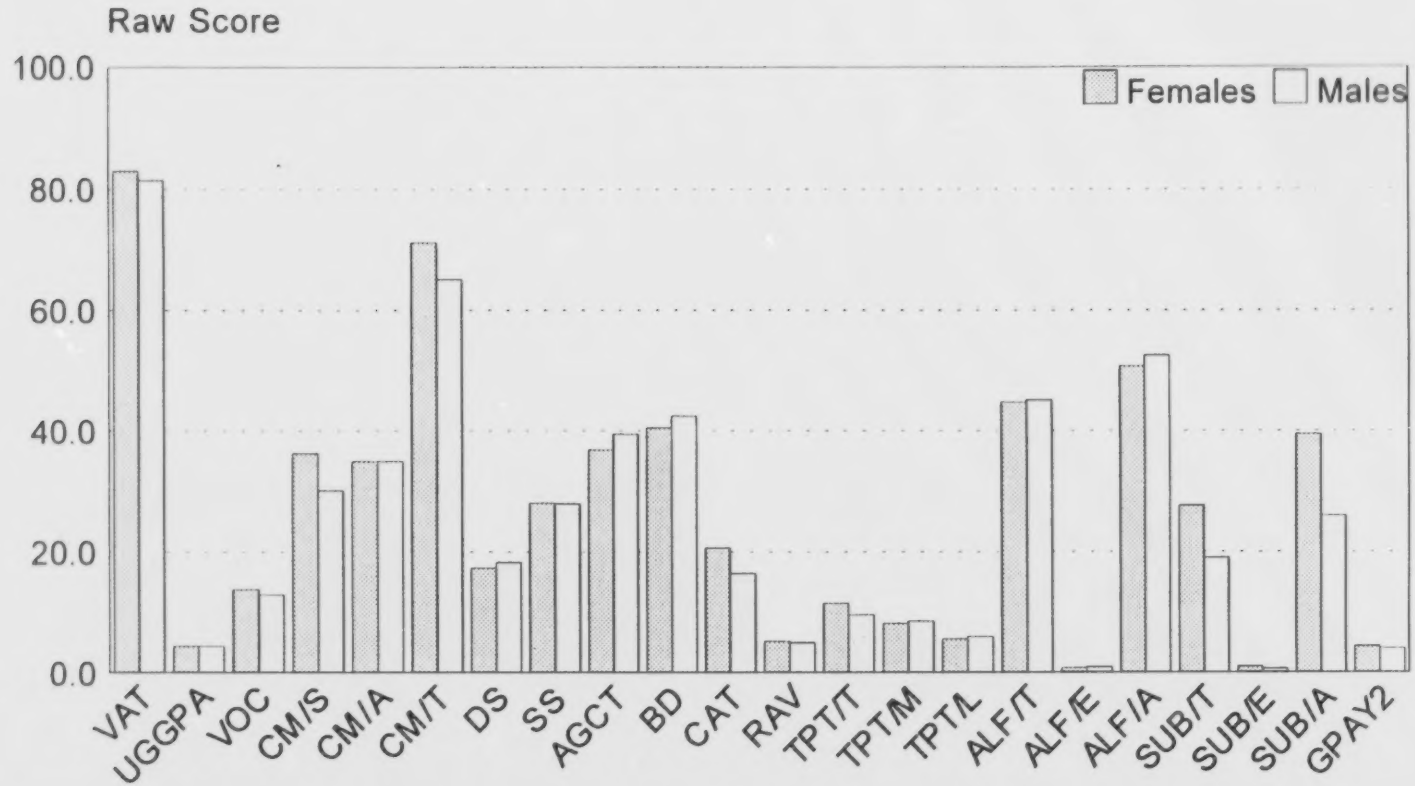
	VAT	UGGPA	VOC	CM/S	CM/A	CM/T	DS	SS	AGCT	BD	CAT	RAV	TPT/T	TPT/M	TPT/L	ALF/T	ALF/E	ALF/A	SUB/T	SUB/E	SUB/A	GPAY2
Females	76.2	4.4	13.1	33.1	34.1	67.2	17.2	27.7	36.4	40.7	20.8	3.8	10.7	8.6	6.4	46.3	0.8	52.8	29.6	0.9	40.1	4.0
Males	75.5	4.5	11.9	25.0	30.6	55.6	17.6	27.9	38.9	41.0	21.7	4.3	10.0	8.5	7.0	44.1	0.5	48.3	19.4	0.6	27.2	4.1

Instrument

Figure 1.0

Comparison of Gender Average Scores

Within Each Instrument - Class of '92



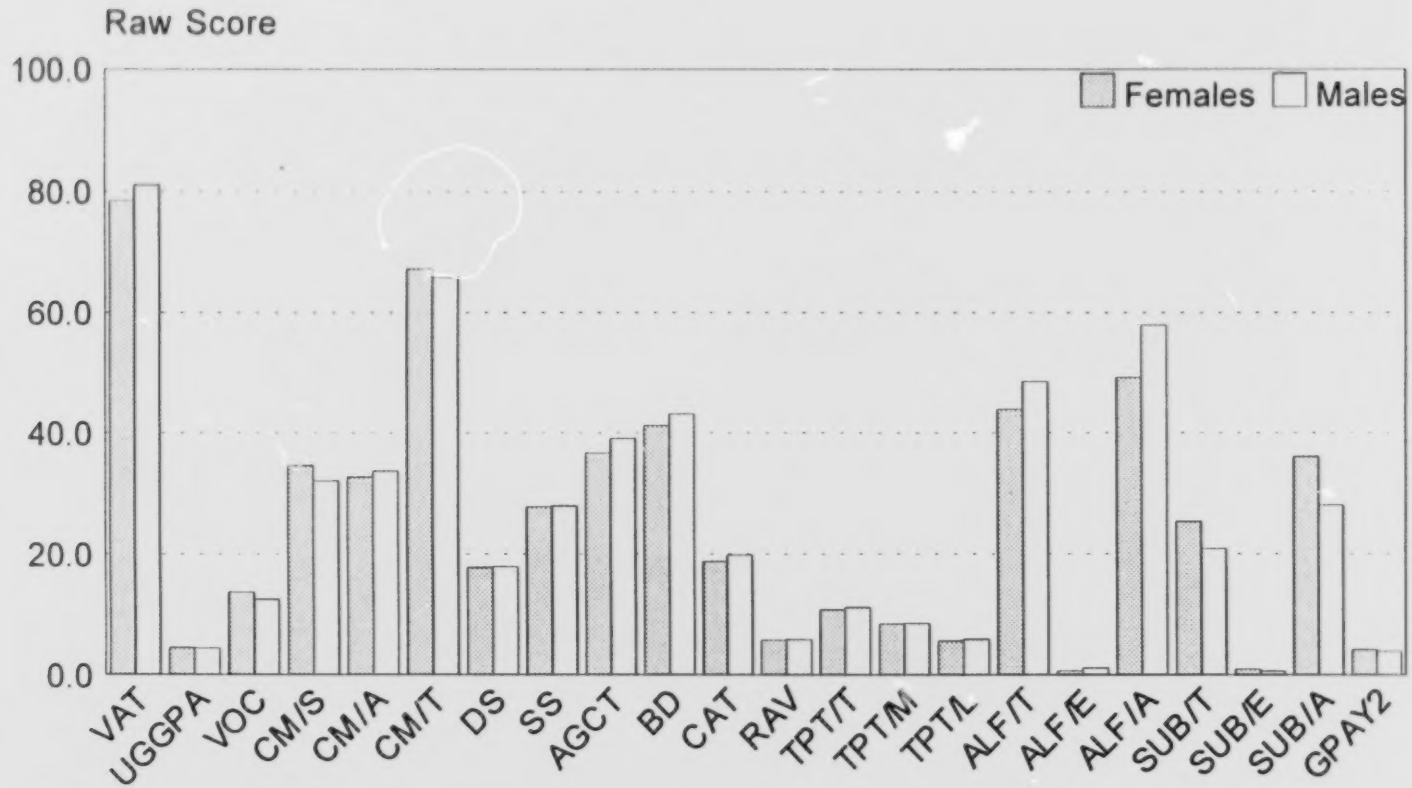
	VAT	UGGPA	VOC	CM/S	CM/A	CM/T	DS	SS	AGCT	BD	CAT	RAV	TPT/T	TPT/M	TPT/L	ALF/T	ALF/E	ALF/A	SUB/T	SUB/E	SUB/A	GPAY2
Females	83.0	4.4	13.8	36.3	34.9	71.2	17.3	28.0	36.9	40.5	20.6	5.1	11.4	8.1	5.5	44.7	0.7	50.7	27.6	1.0	39.5	4.3
Males	81.5	4.4	12.9	30.1	34.9	65.1	18.2	27.9	39.4	42.4	16.4	4.9	9.5	8.5	5.9	45.0	0.9	52.5	19.0	0.6	25.9	4.0

Instrument

Figure 1.1

Comparison of Gender Average Scores

Within Each Instrument - Class of '93



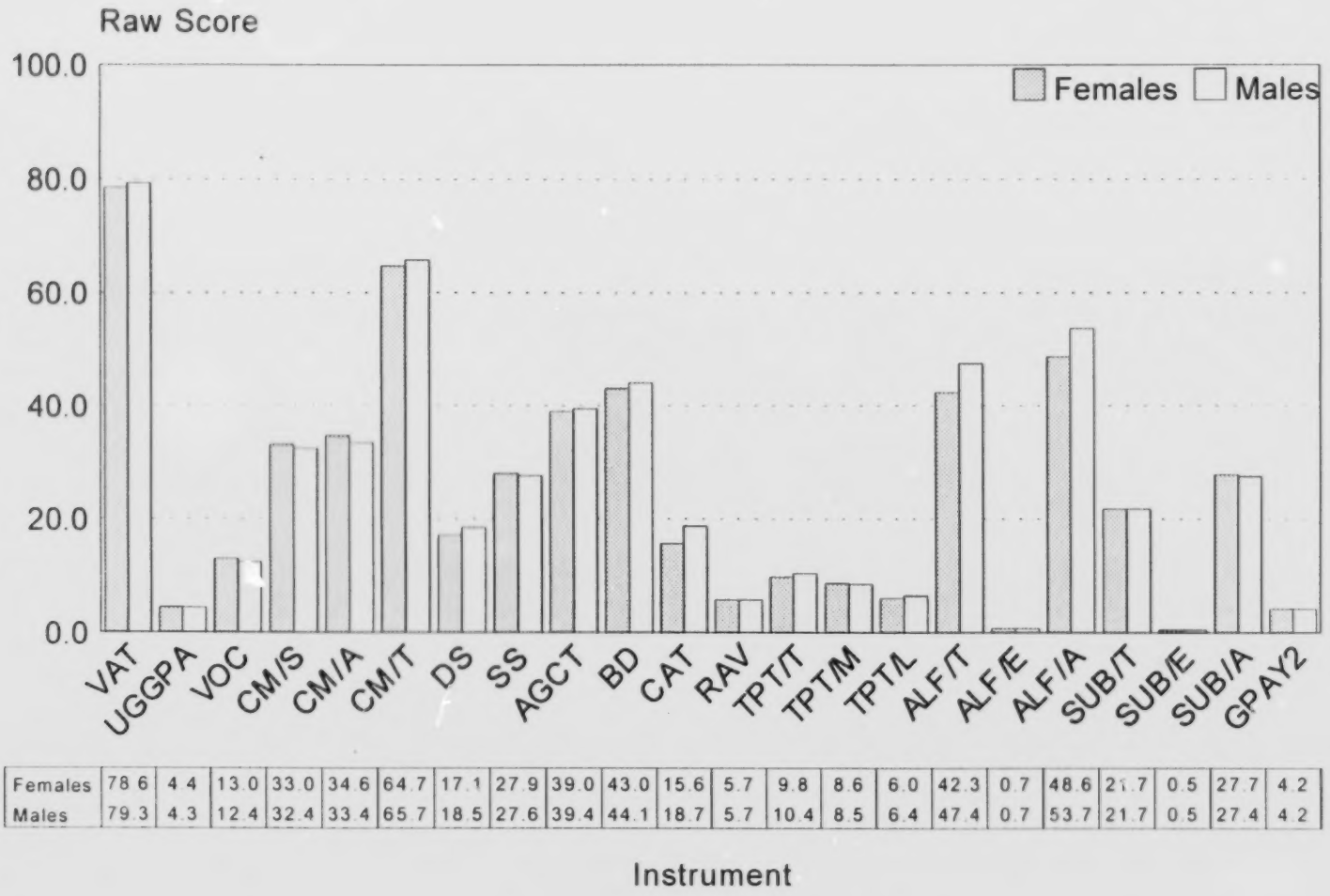
	VAT	UGGPA	VOC	CM/S	CM/A	CM/T	DS	SS	AGCT	BD	CAT	RAV	TPT/T	TPT/M	TPT/L	ALF/T	ALF/E	ALF/A	SUB/T	SUB/E	SUB/A	GPAY2
Females	78.5	4.4	13.6	34.6	32.7	67.3	17.7	27.8	36.7	41.2	18.7	5.7	10.7	8.4	5.6	43.9	0.6	49.2	25.3	0.9	36.0	4.1
Males	81.1	4.4	12.4	32.1	33.7	65.8	17.9	27.9	39.0	43.1	19.8	5.8	11.1	8.5	5.9	48.4	1.1	57.9	20.9	0.6	28.0	3.9

Instrument

Figure 1.2

Comparison of Gender Average Scores

Within Each Instrument - Class of '94

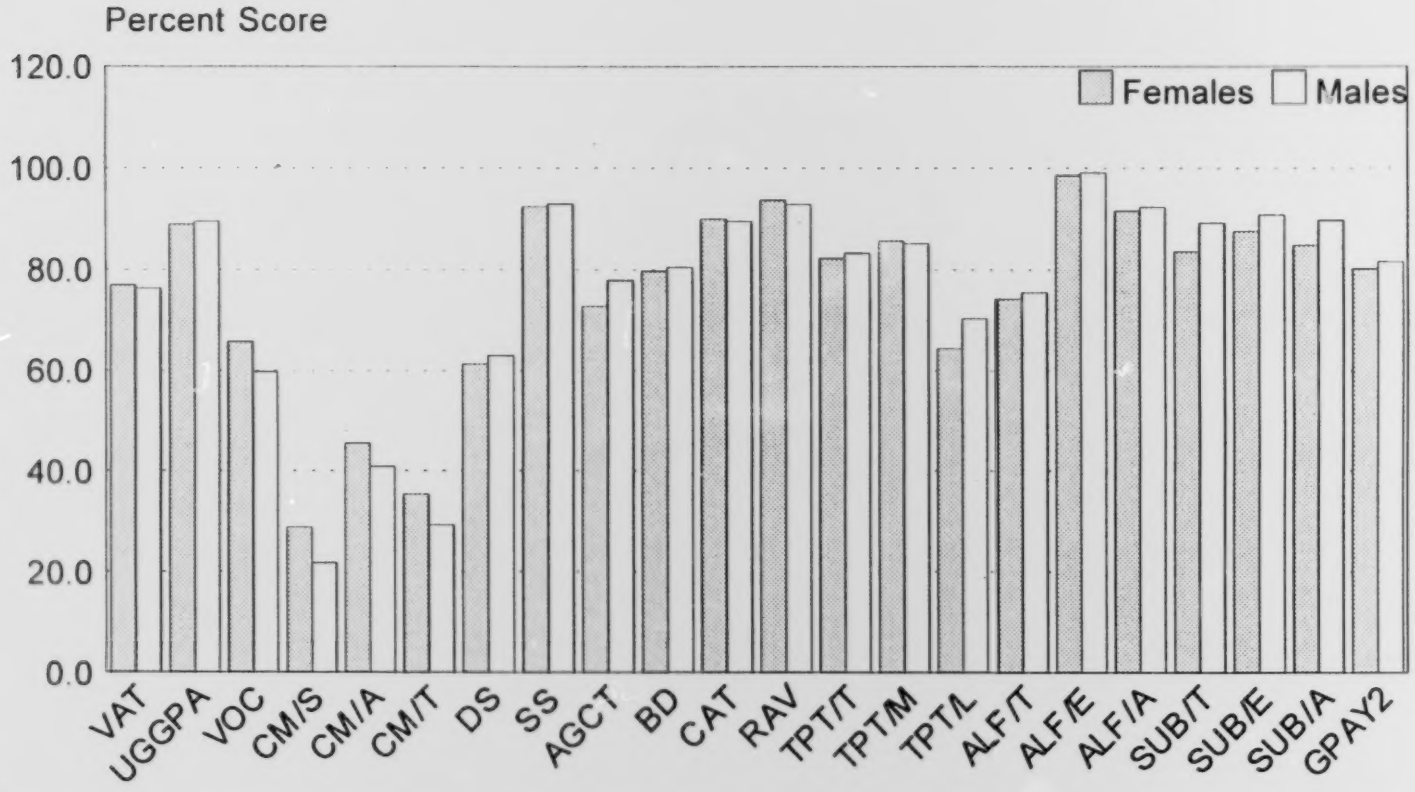


	VAT	UGGPA	VOC	CM/S	CM/A	CM/T	DS	SS	AGCT	BD	CAT	RAV	TPT/T	TPT/M	TPT/L	ALF/T	ALF/E	ALF/A	SUB/T	SUB/E	SUB/A	GPAY2
Females	78.6	4.4	13.0	33.0	34.6	64.7	17.1	27.9	39.0	43.0	15.6	5.7	9.8	8.6	6.0	42.3	0.7	48.6	21.7	0.5	27.7	4.2
Males	79.3	4.3	12.4	32.4	33.4	65.7	18.5	27.6	39.4	44.1	18.7	5.7	10.4	8.5	6.4	47.4	0.7	53.7	21.7	0.5	27.4	4.2

Figure 1.3

Comparison of Gender Average Scores

Within Each Instrument - Class of '91



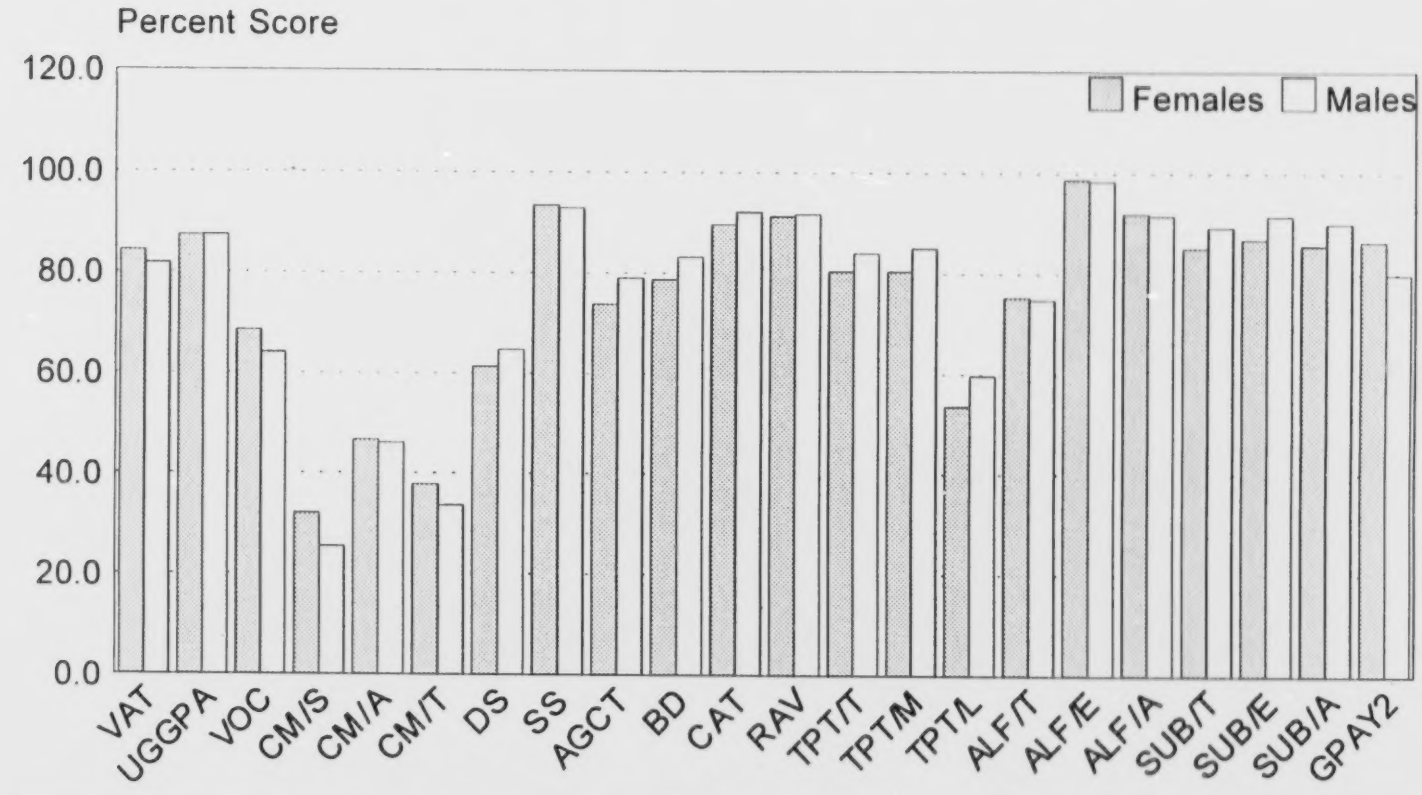
	VAT	UGGPA	VOC	CM/S	CM/A	CM/T	DS	SS	AGCT	BD	CAT	RAV	TPT/T	TPT/M	TPT/L	ALF/T	ALF/E	ALF/A	SUB/T	SUB/E	SUB/A	GPAY2
Females	77.0	89.0	65.7	28.8	45.5	35.4	61.3	92.4	72.8	79.7	90.0	93.7	82.2	85.7	64.3	74.3	98.5	91.5	83.6	87.6	84.8	80.2
Males	76.3	89.5	59.7	21.7	40.9	29.3	62.9	92.9	77.9	80.5	89.5	92.8	83.3	85.2	70.3	75.5	99.1	92.3	89.2	90.8	89.7	81.6

Instrument

Figure 2.0

Comparison of Gender Average Scores

Within Each Instrument - Class of '92



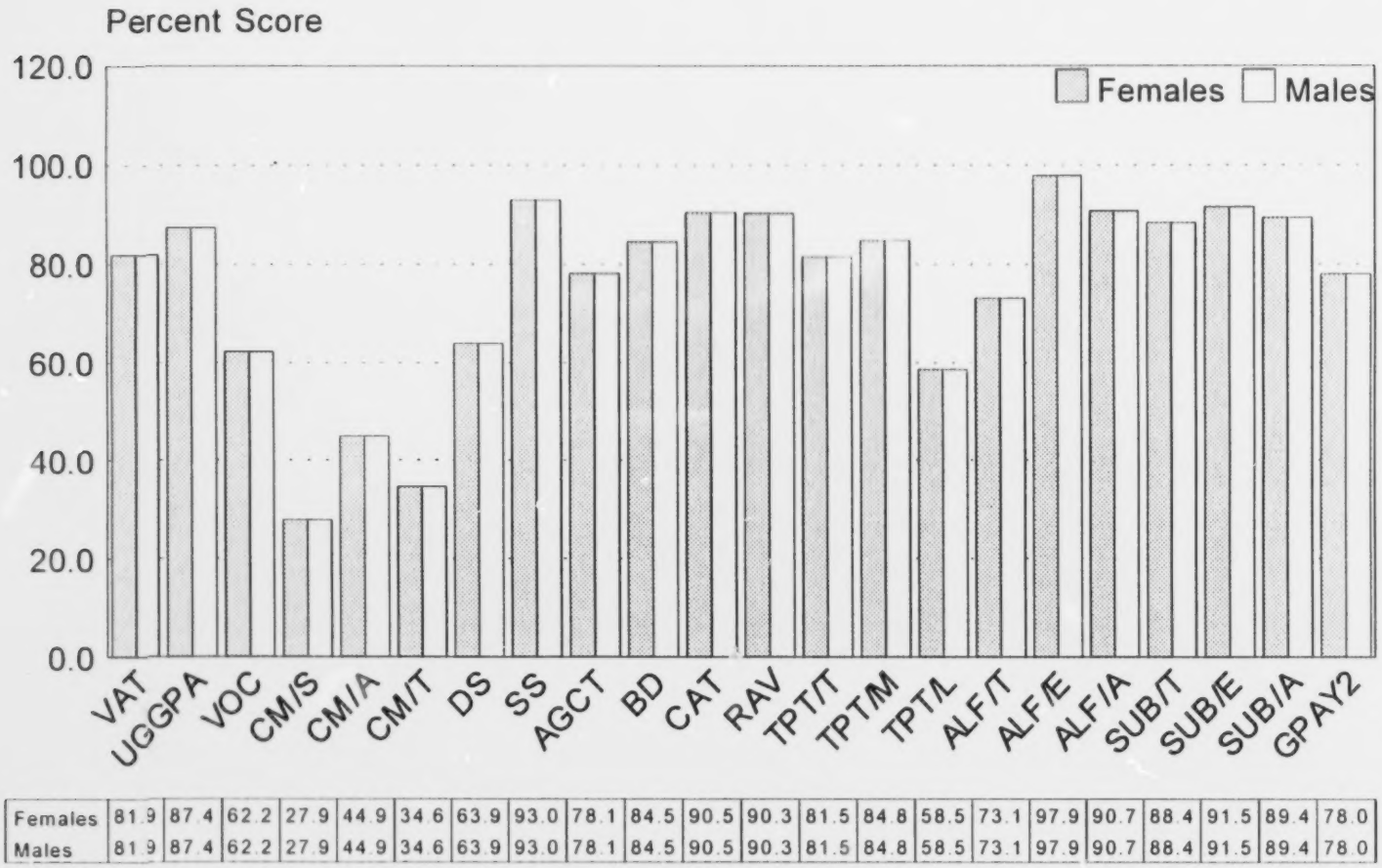
	VAT	UGGPA	VOC	CM/S	CM/A	CM/T	DS	SS	AGCT	BD	CAT	RAV	TPT/T	TPT/M	TPT/L	ALF/T	ALF/E	ALF/A	SUB/T	SUB/E	SUB/A	GPAY2
Females	84.4	87.4	68.5	32.0	46.7	37.8	61.3	93.4	73.8	78.7	89.7	91.3	80.4	80.4	53.5	75.3	98.7	91.9	85.2	86.9	85.7	86.4
Males	81.8	87.4	64.1	25.4	46.1	33.6	64.7	92.8	78.9	83.2	92.1	91.7	84.0	85.0	59.7	74.8	98.4	91.6	89.3	91.5	90.0	79.9

Instrument

Figure 2.1

Comparison of Gender Average Scores

Within Each Instrument - Class of '93



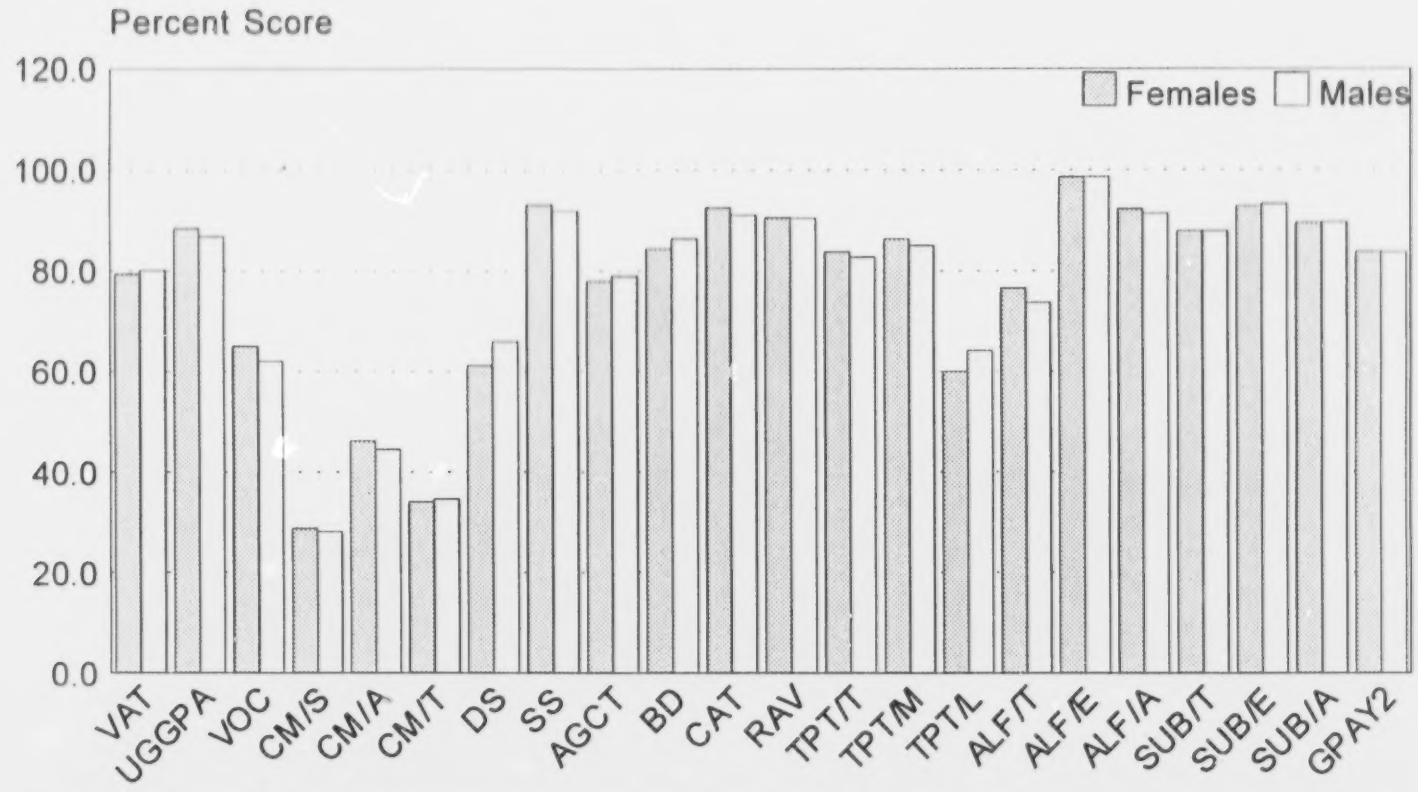
	VAT	UGGPA	VOC	CM/S	CM/A	CM/T	DS	SS	AGCT	BD	CAT	RAV	TPT/T	TPT/M	TPT/L	ALF/T	ALF/E	ALF/A	SUB/T	SUB/E	SUB/A	GPAY2
Females	81.9	87.4	62.2	27.9	44.9	34.6	63.9	93.0	78.1	84.5	90.5	90.3	81.5	84.8	58.5	73.1	97.9	90.7	88.4	91.5	89.4	78.0
Males	81.9	87.4	62.2	27.9	44.9	34.6	63.9	93.0	78.1	84.5	90.5	90.3	81.5	84.8	58.5	73.1	97.9	90.7	88.4	91.5	89.4	78.0

Instrument

Figure 2.2

Comparison of Gender Average Scores

Within Each Instrument - Class of '94



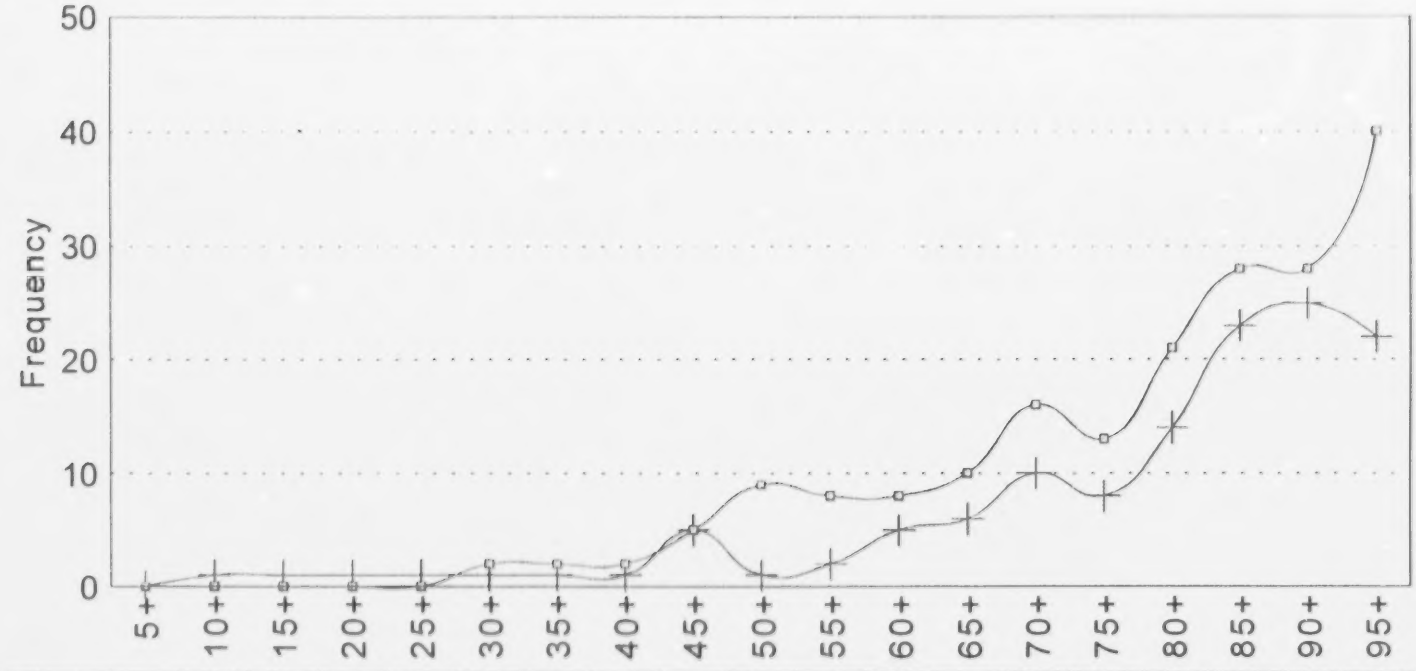
	VAT	UGGPA	VOC	CM/S	CM/A	CM/T	DS	SS	AGCT	BD	CAT	RAV	TPT/T	TPT/M	TPT/L	ALF/T	ALF/E	ALF/A	SUB/T	SUB/E	SUB/A	GPAY2
Females	79.4	88.5	65.0	28.7	46.2	34.1	61.2	93.0	77.9	84.4	92.5	90.5	83.7	86.3	60.0	76.5	98.6	92.2	87.9	92.9	89.5	83.8
Males	80.1	86.8	62.1	28.1	44.5	34.6	66.0	91.9	78.9	86.4	91.0	90.4	82.7	85.0	64.1	73.6	98.6	91.4	87.9	93.3	89.6	83.7

Instrument

Figure 2.3

Veterinary Aptitude Test

Frequency Distribution - Raw Scores



	5+	10+	15+	20+	25+	30+	35+	40+	45+	50+	55+	60+	65+	70+	75+	80+	85+	90+	95+
Females	0	0	0	0	0	2	2	2	5	9	8	8	10	16	13	21	28	28	40
Males	0	1	1	1	1	1	1	1	5	1	2	5	6	10	8	14	23	25	22

Score (Range 0-99)

Females Males

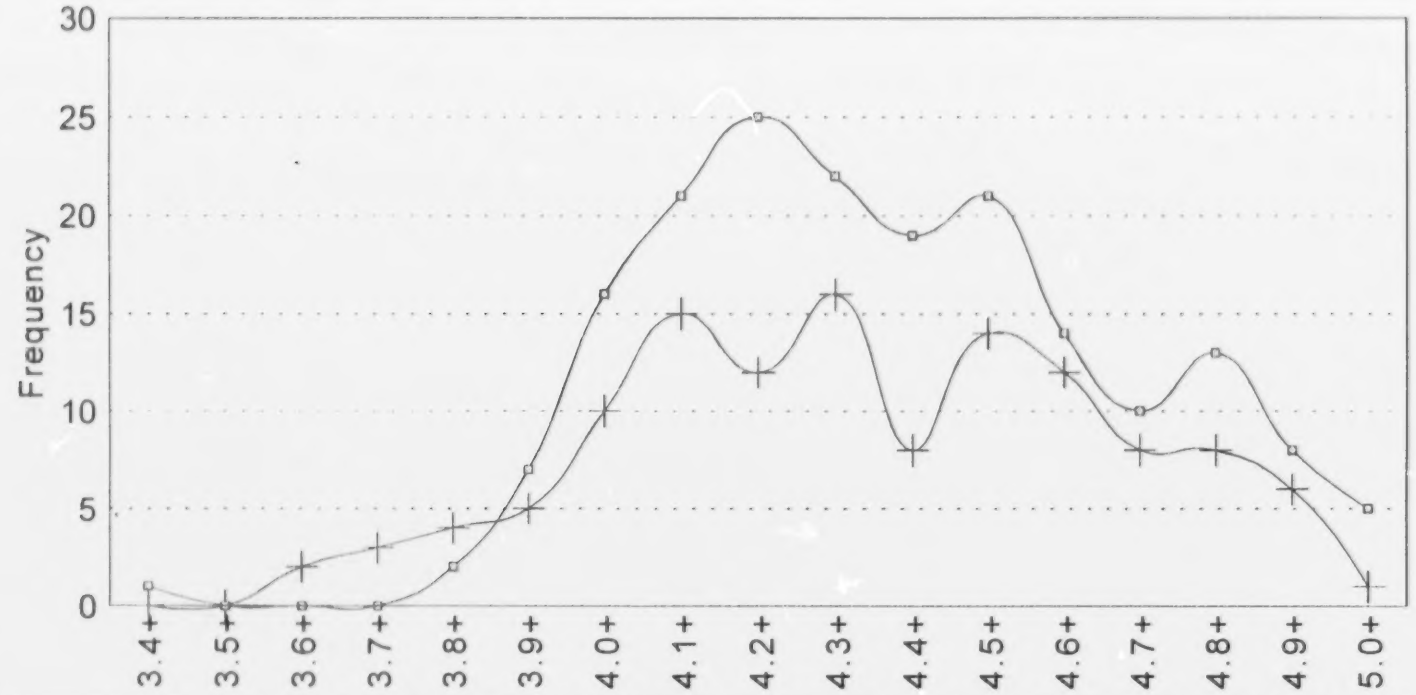
41

Figure 3.00

42

Undergraduate Grade Point Average

Frequency Distribution



	3.4+	3.5+	3.6+	3.7+	3.8+	3.9+	4.0+	4.1+	4.2+	4.3+	4.4+	4.5+	4.6+	4.7+	4.8+	4.9+	5.0+
Females	1	0	0	0	2	7	16	21	25	22	19	21	14	10	13	8	5
Males	0	0	2	3	4	5	10	15	12	16	8	14	12	8	8	6	1

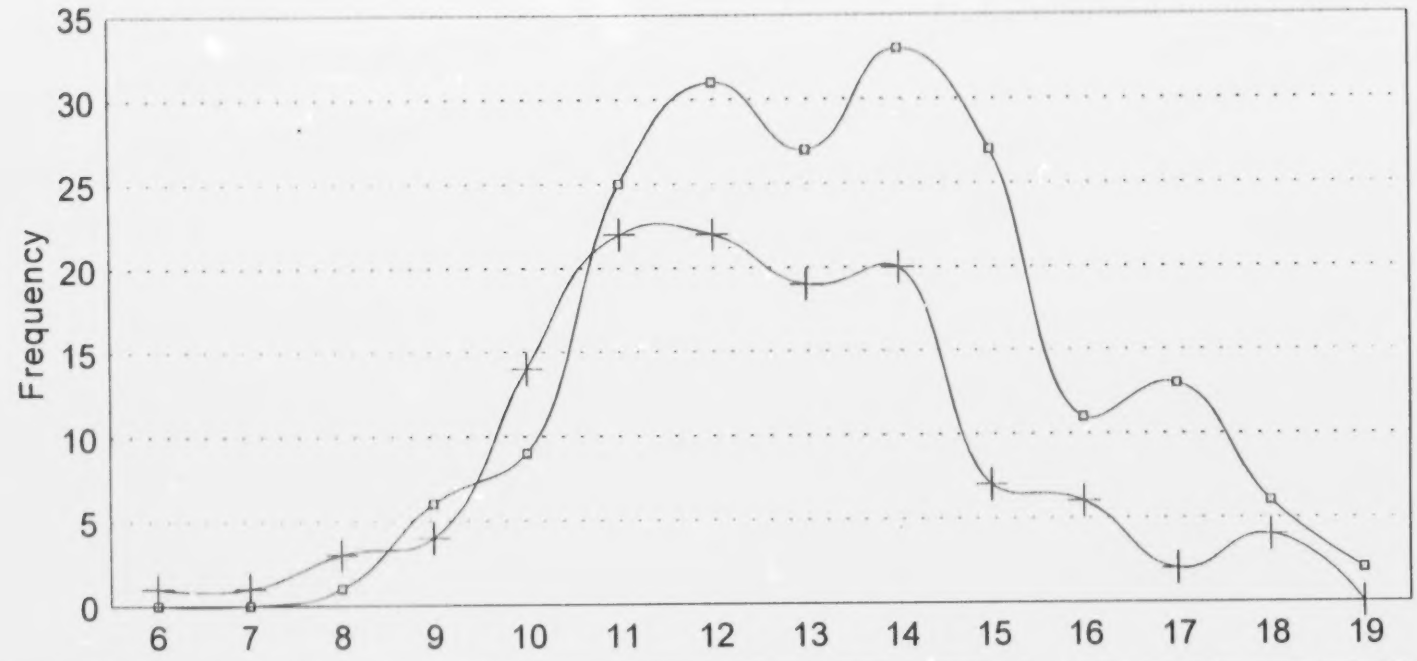
Score (Range 0 - 5.0)

Females Males

Figure 3.01

Vocabulary Test

Frequency Distribution - Raw Scores

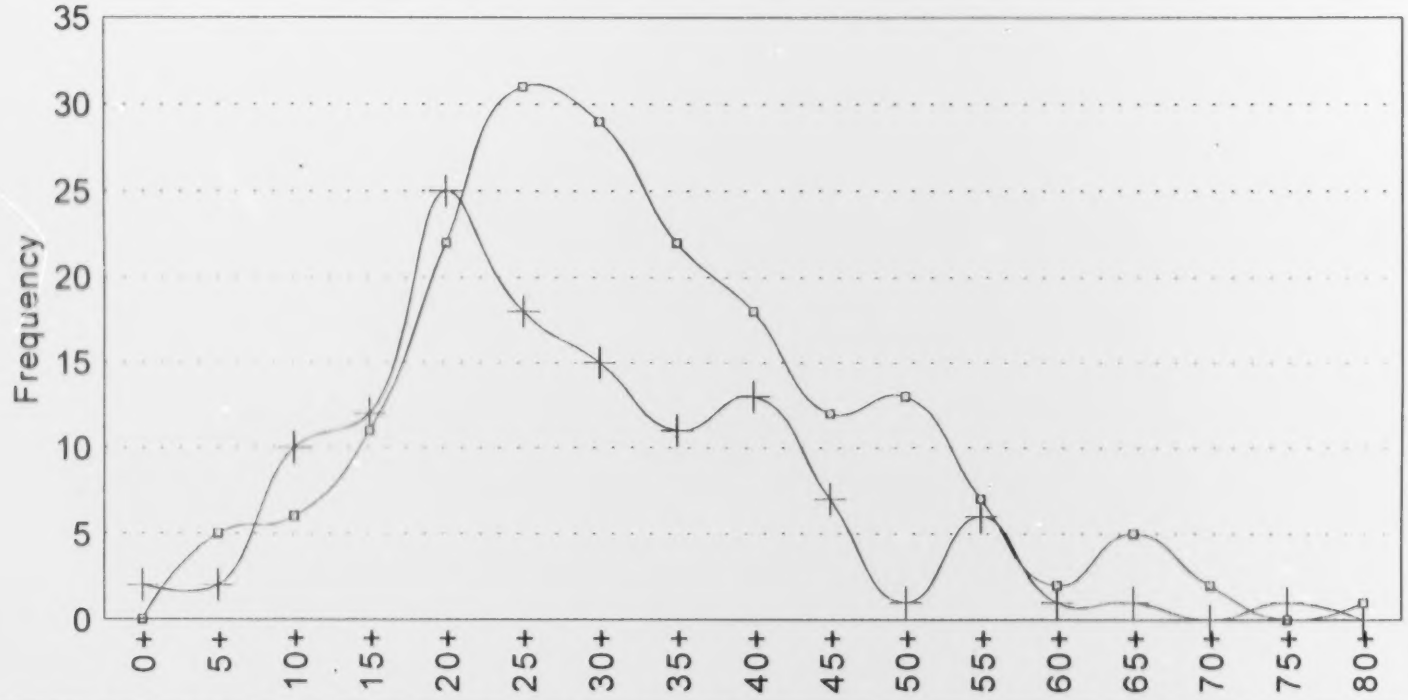


	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Females	0	0	1	6	9	25	31	27	33	27	11	13	6	2
Males	1	1	3	4	14	22	22	19	20	7	6	2	4	0

Figure 3.02

Terman Concept Mastery (Synonyms)

Frequency Distribution - Raw Scores



	0+	5+	10+	15+	20+	25+	30+	35+	40+	45+	50+	55+	60+	65+	70+	75+	80+
Females	0	5	6	11	22	31	29	22	18	12	13	7	2	5	2	0	1
Males	2	2	10	12	25	18	15	11	13	7	1	6	1	1	0	1	0

Scores (Range 0 - 115)

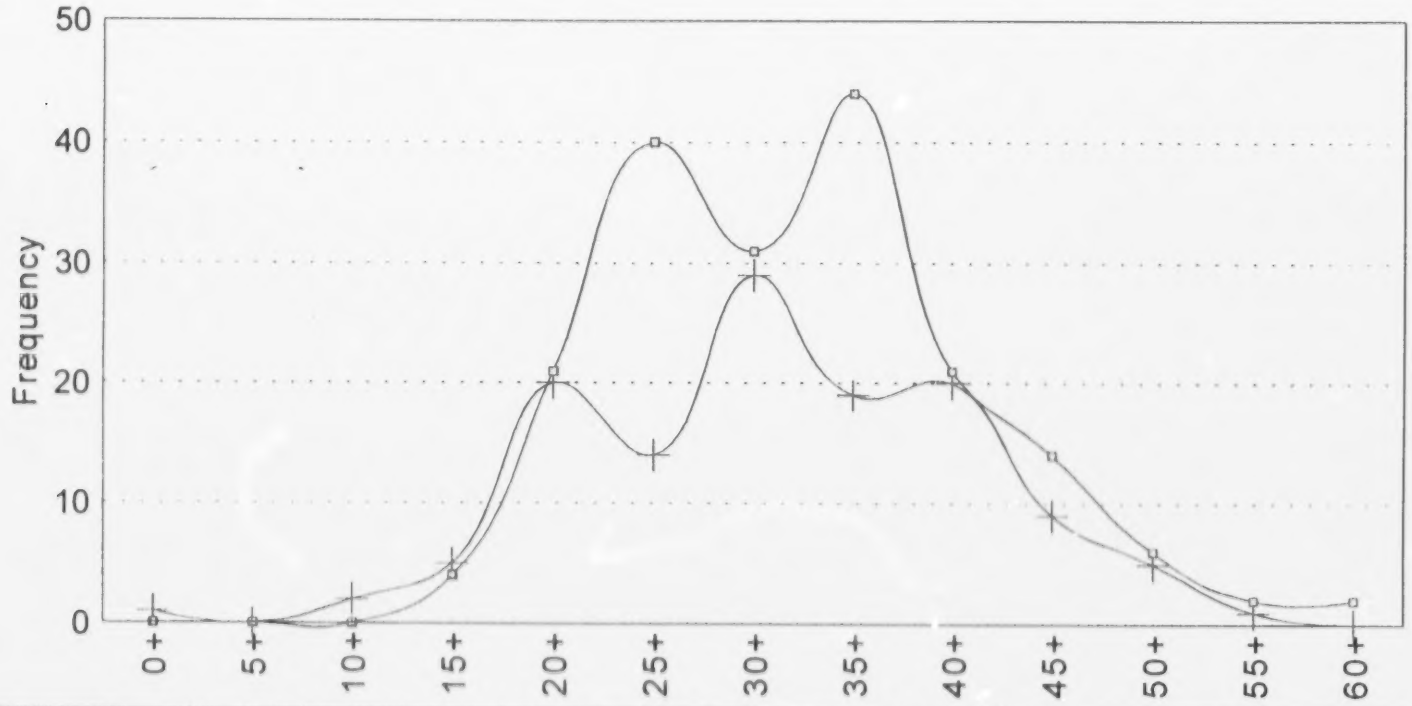
Females Males

47

Figure 3.03

Terman Concept Mastery (Analogies)

Frequency Distribution - Raw Scores

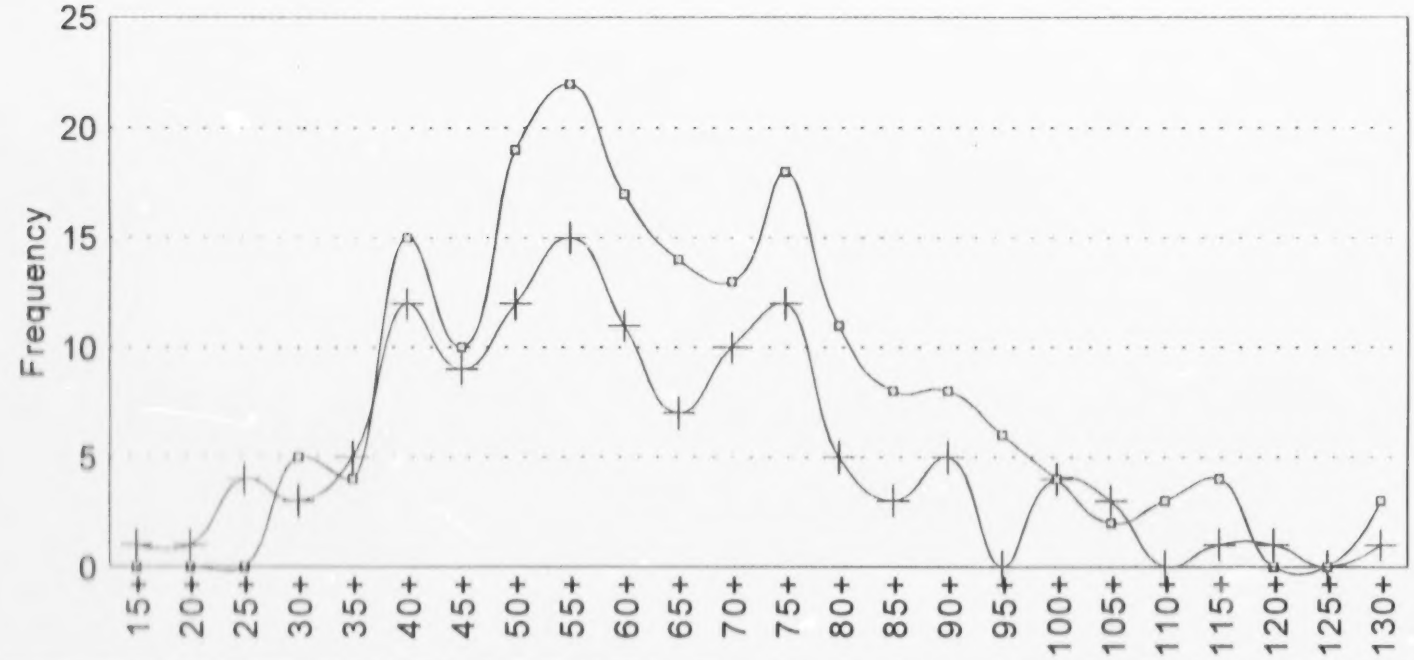


Females	0	0	0	4	21	40	31	44	21	14	6	2	2
Males	1	0	2	5	20	14	29	19	20	9	5	1	0

Figure 3.04

Terman Concept Mastery (Total)

Frequency Distribution - Raw Scores



	15+	20+	25+	30+	35+	40+	45+	50+	55+	60+	65+	70+	75+	80+	85+	90+	95+	100+	105+	110+	115+	120+	125+	130+
Females	0	0	0	5	4	15	10	19	22	17	14	13	18	11	8	8	6	4	2	3	4	0	0	3
Males	1	1	4	3	5	12	9	12	15	11	7	10	12	5	3	5	0	4	3	0	1	1	0	1

Scores (Range 0 - 190)

Females Males

Figure 3.05

Digit Span

Frequency Distribution - Raw Scores

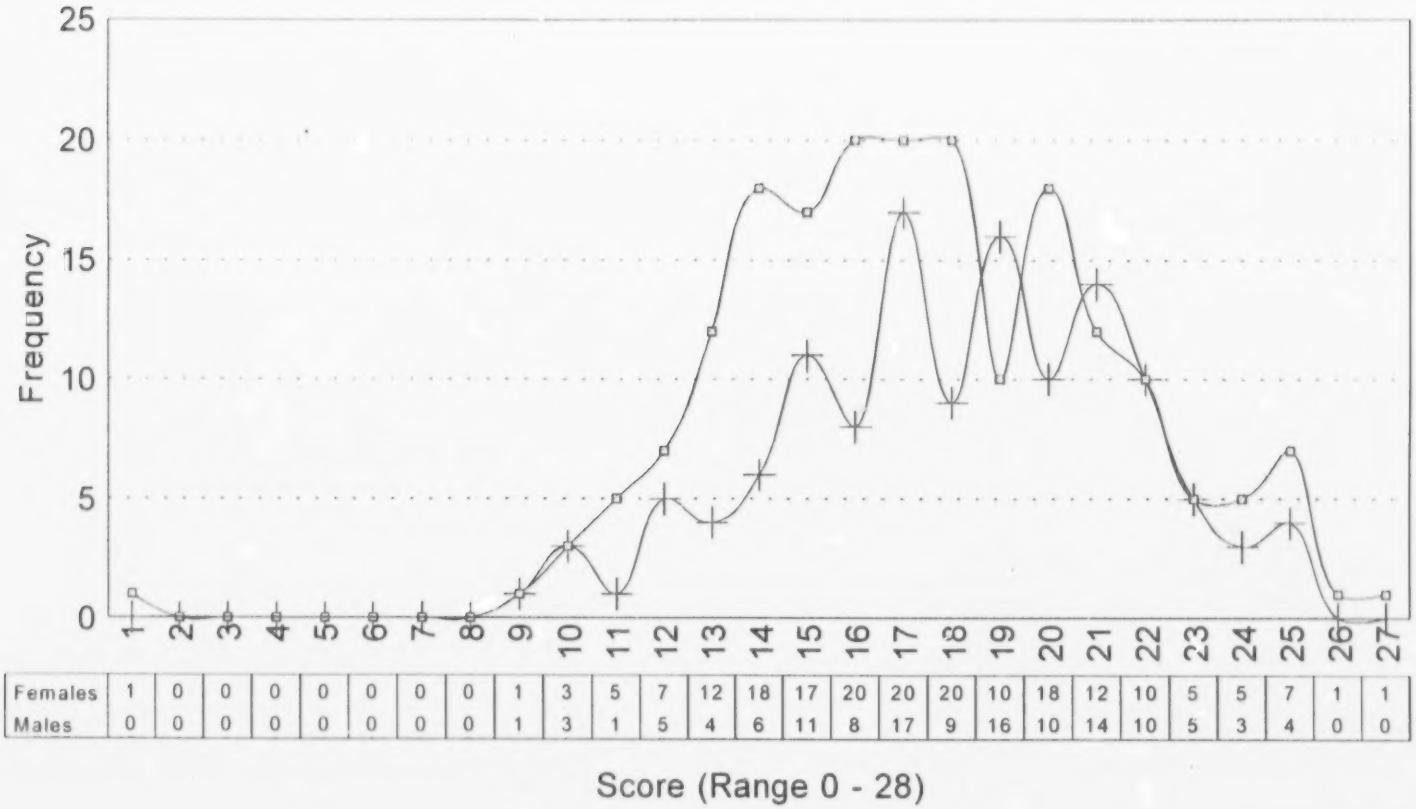
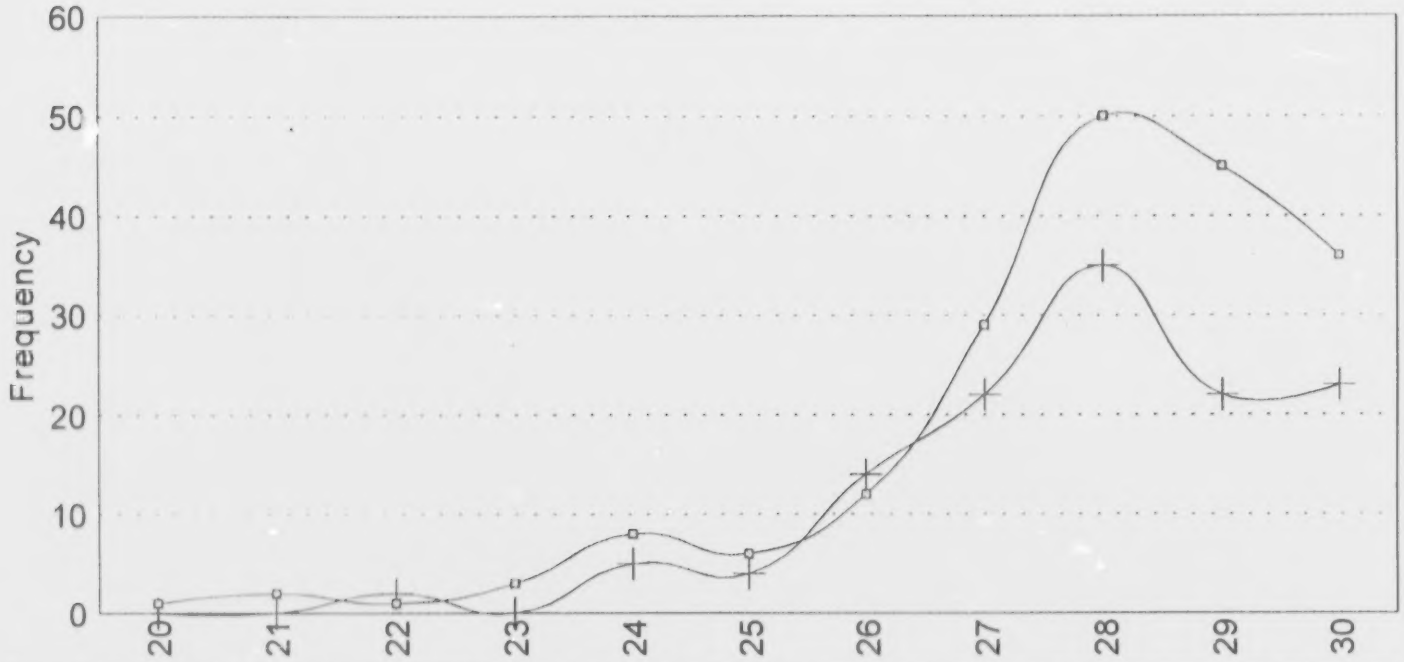


Figure 3.06

Rhythm Test (Seashore)

Frequency Distribution - Raw Scores



Females	1	2	1	3	8	6	12	29	50	45	36
Males	0	0	2	0	5	4	14	22	35	22	23

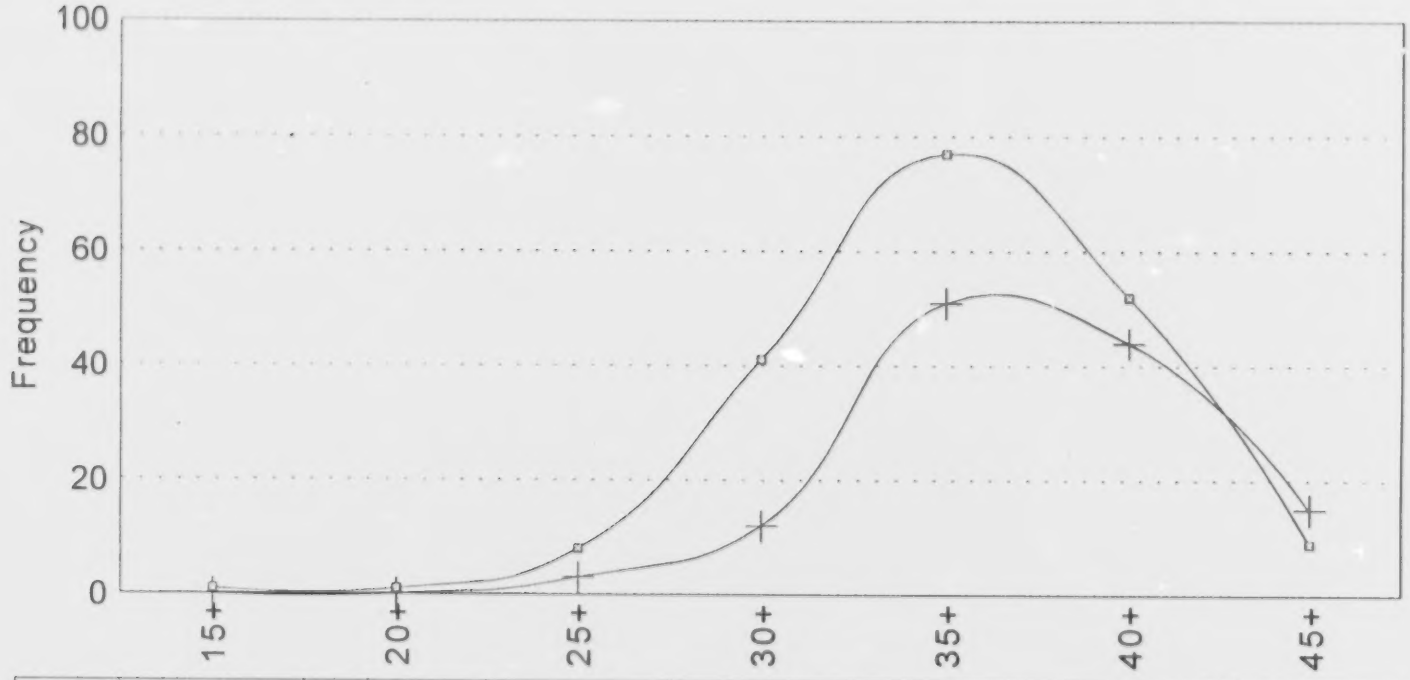
Score (Range 0 - 30)

Females Males

Figure 3.07

Army General Classification Test

Frequency Distribution - Raw Scores



	15+	20+	25+	30+	35+	40+	45+
Females	1	1	8	41	77	52	9
Males	0	0	3	12	51	44	15

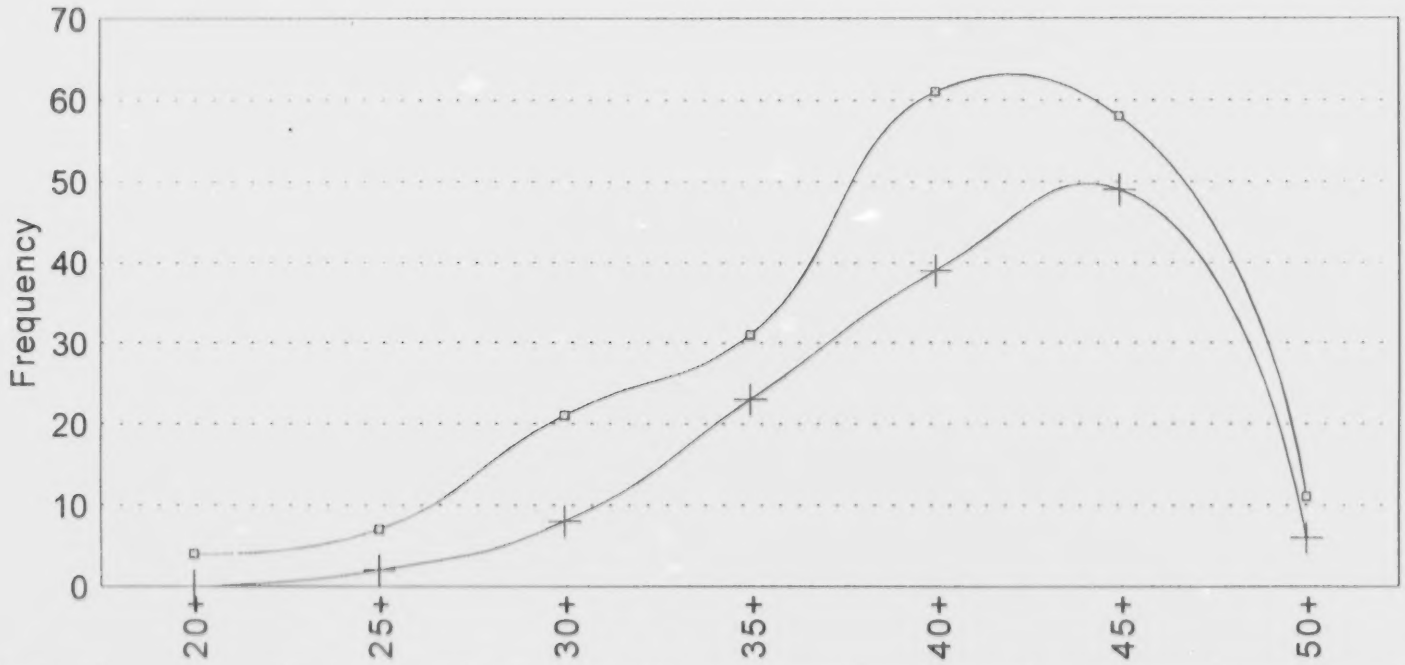
Score (Range 0 - 50)

Females Males

Figure 3.08

WAIS Block Design

Frequency Distribution - Raw Scores



	20+	25+	30+	35+	40+	45+	50+
Females	4	7	21	31	61	58	11
Males	0	2	8	23	39	49	6

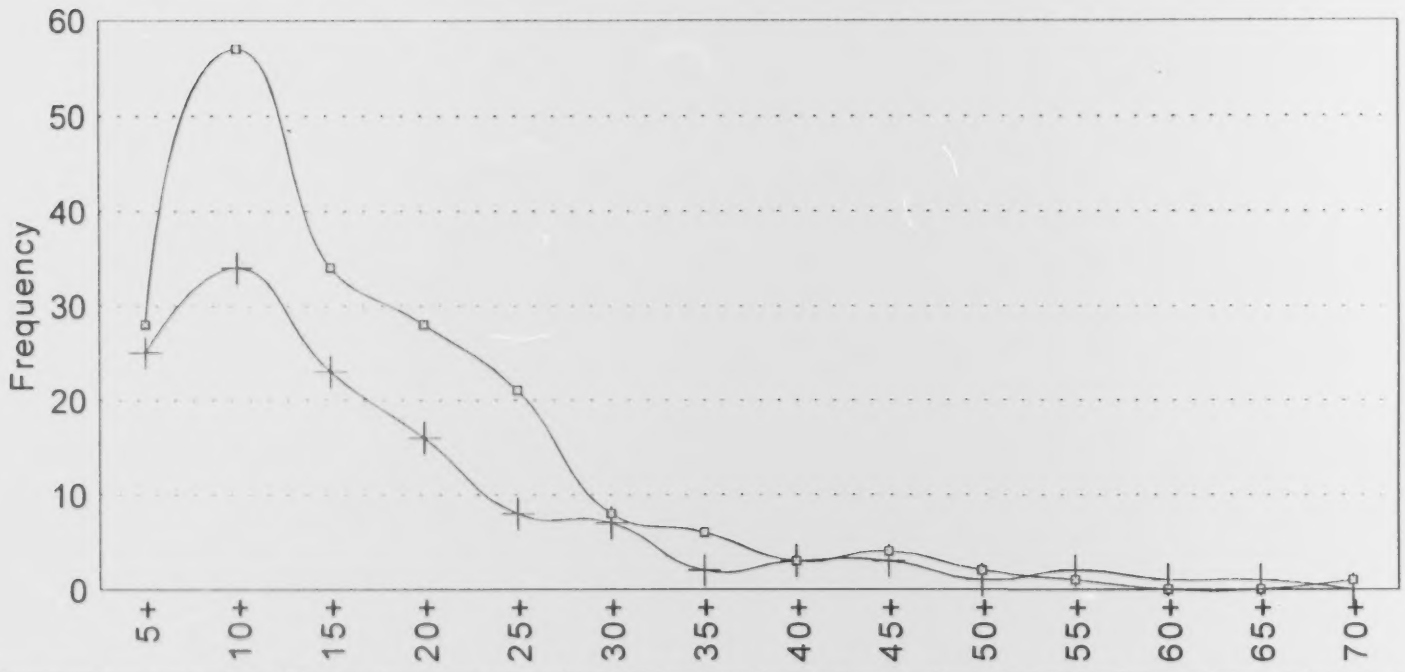
Score (Range 0 - 51)

Females Males

Figure 3.09

Halstead Category Test

Frequency Distribution - Raw Scores



	5+	10+	15+	20+	25+	30+	35+	40+	45+	50+	55+	60+	65+	70+
Females	28	57	34	28	21	8	6	3	4	2	1	0	0	1
Males	25	34	23	16	8	7	2	3	3	1	2	1	1	0

Score (Range 0 - 208)

Females Males

Figure 3.10

Ravens Progressive Matrices

Frequency Distribution - Raw Scores

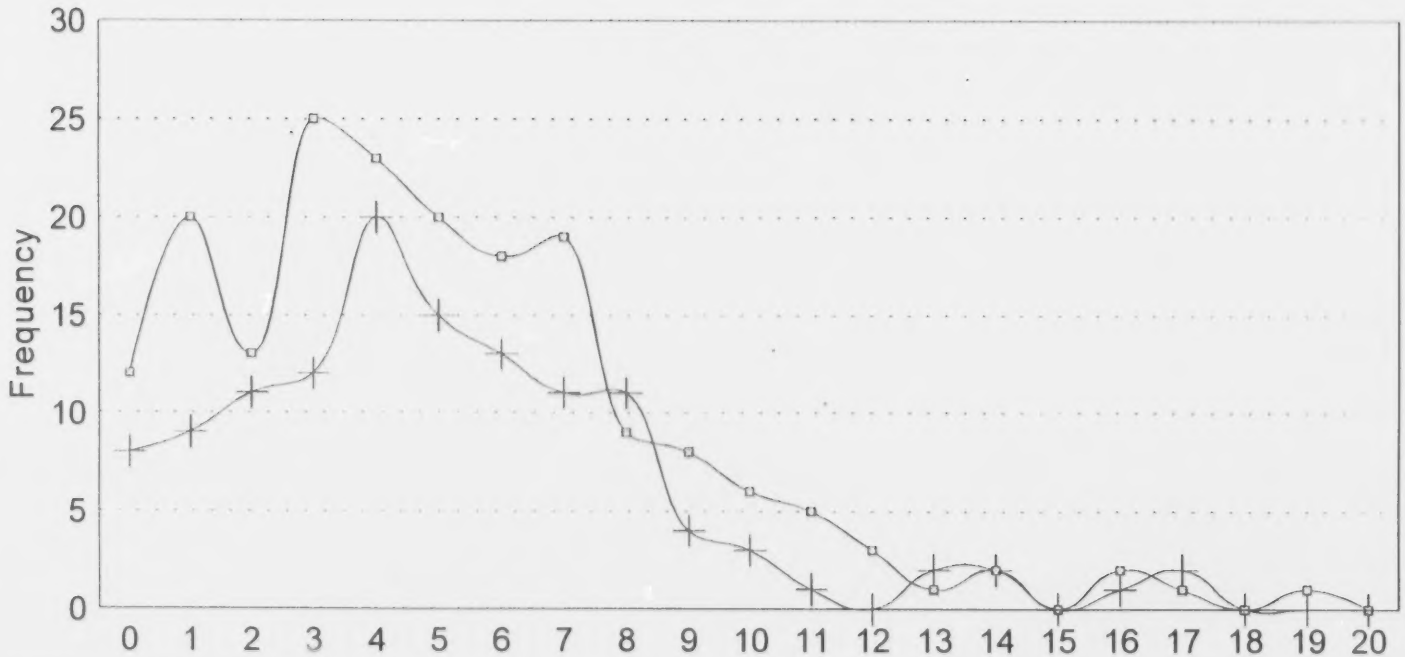


Figure 3.11

Tactual Performance Test (Time)

Frequency Distribution - Raw Scores

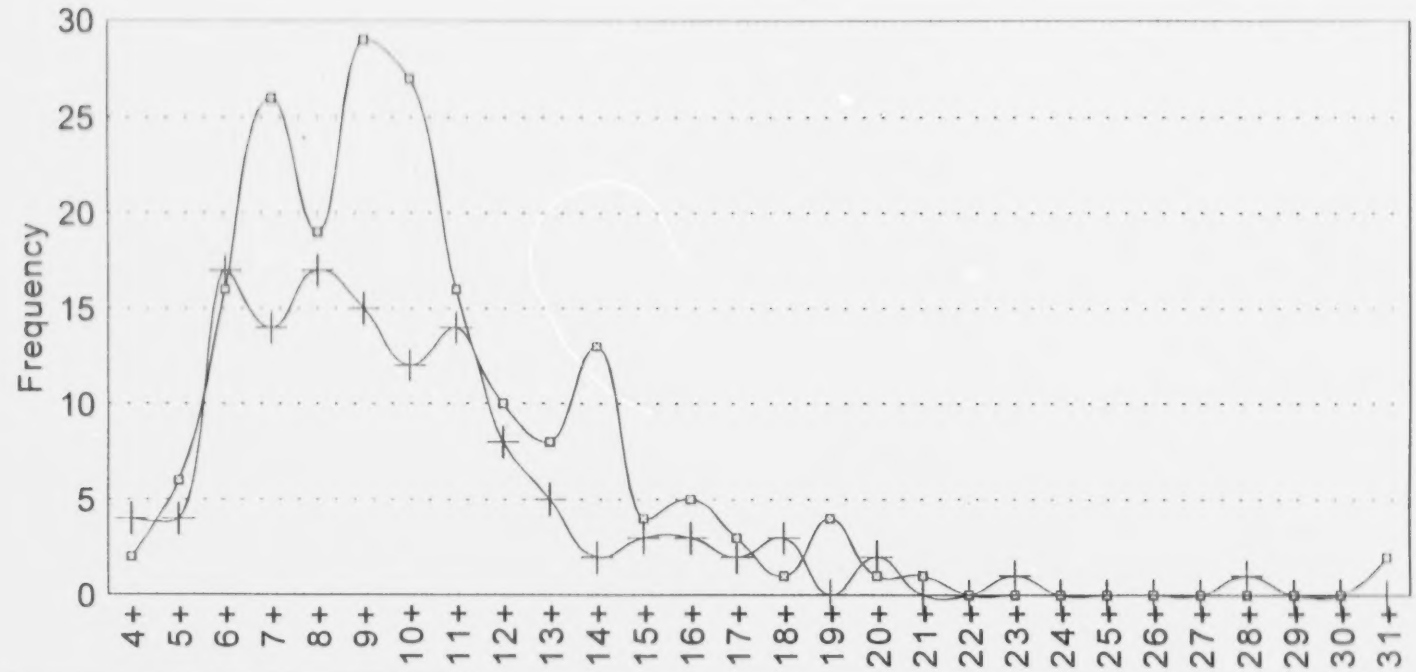
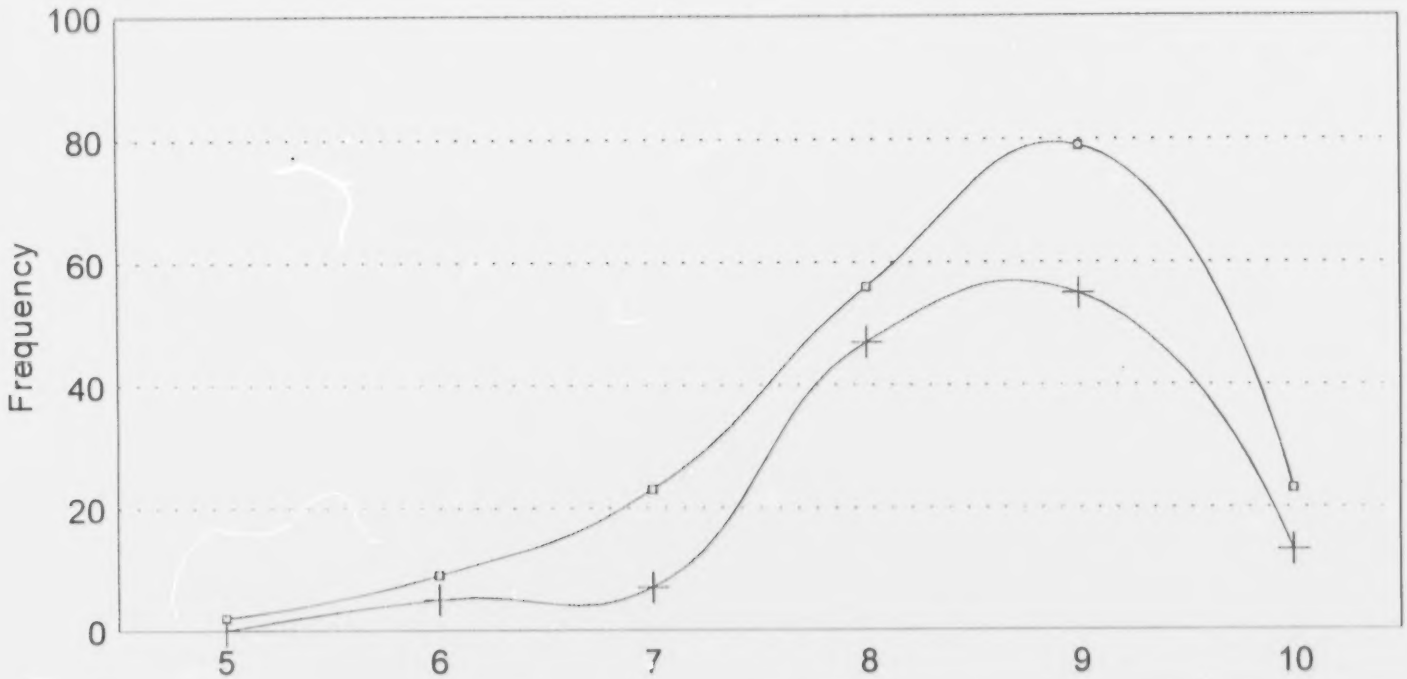


Figure 3.12

Tactual Performance Test (Memory)

Frequency Distribution - Raw Scores

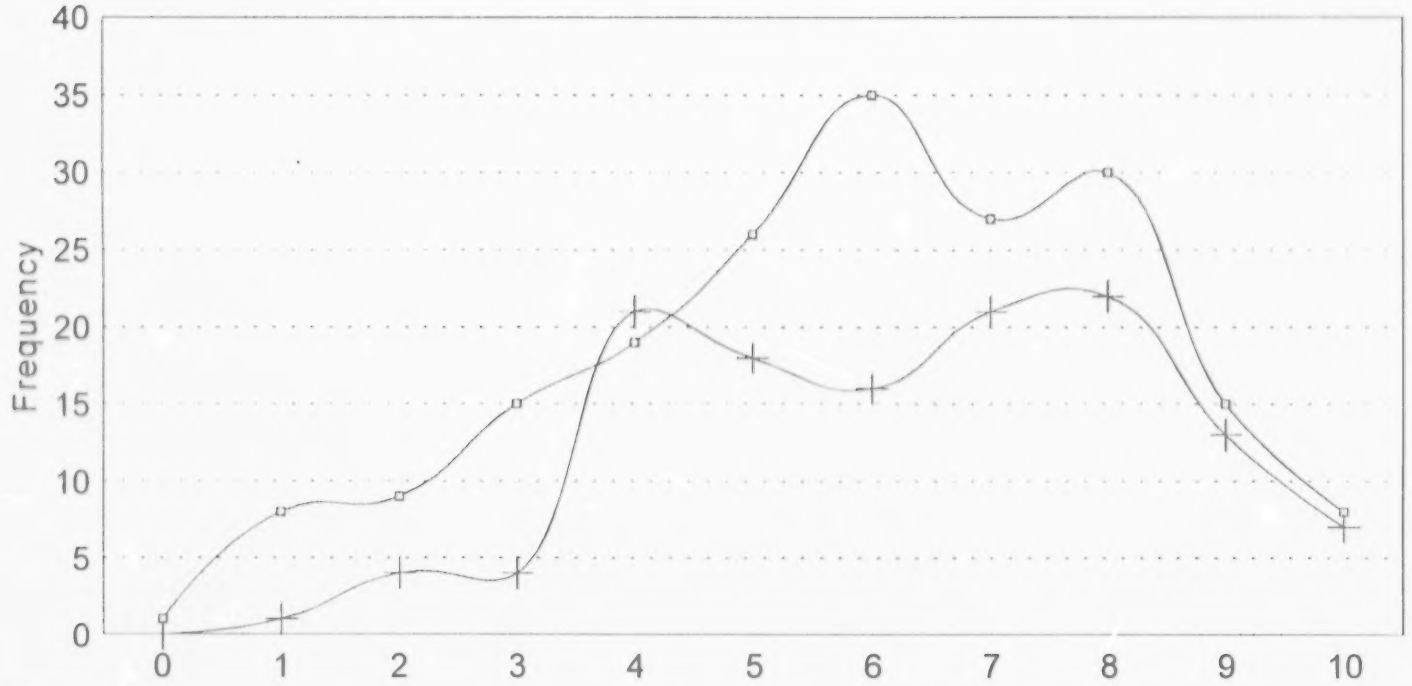


	5	6	7	8	9	10
Females	2	9	23	56	79	23
Males	0	5	7	47	55	13

Figure 3.13

Tactual Performance Test (Location)

Frequency Distribution - Raw Scores



Females	1	8	9	15	19	26	35	27	30	15	8
Males	0	1	4	4	21	18	16	21	22	13	7

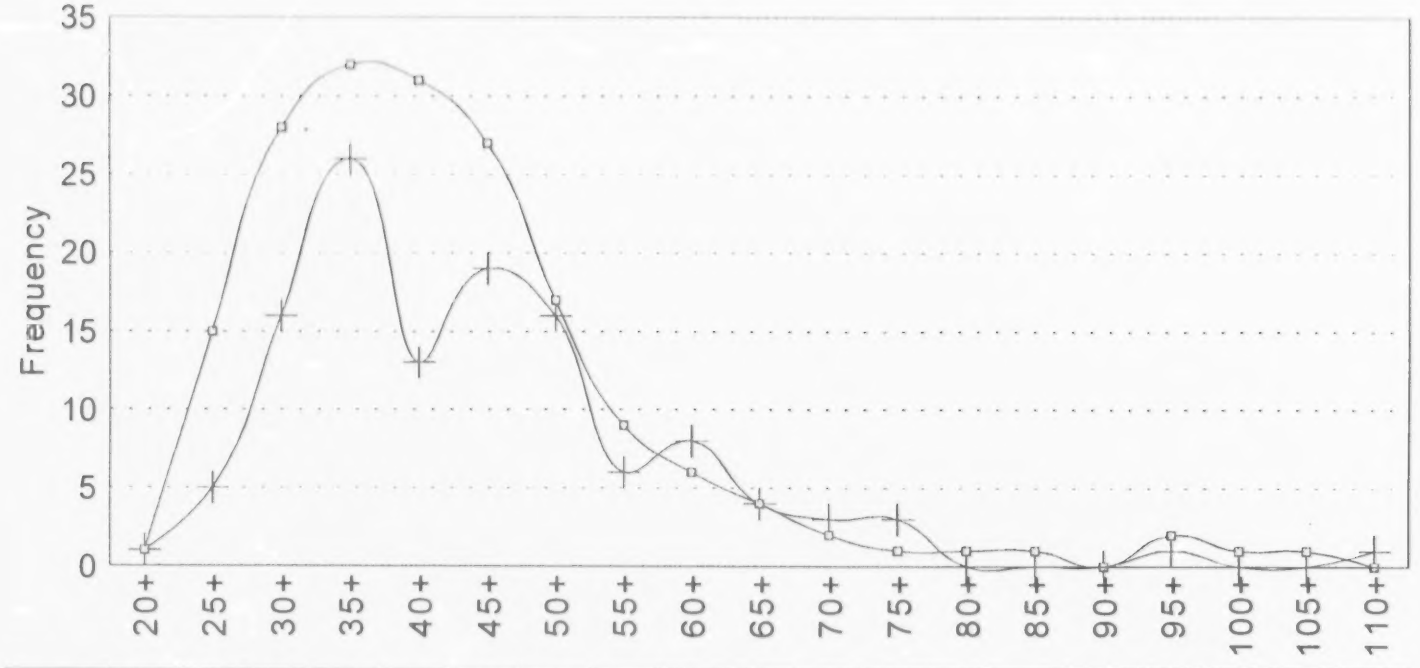
Score (Range 0 - 10)

Females Males

Figure 3.14

Alphabet/Count (Time)

Frequency Distribution - Raw Scores



Females	1	15	28	32	31	27	17	9	6	4	2	1	1	1	0	2	1	1	0
Males	1	5	16	26	13	19	16	6	8	4	3	3	0	0	0	1	0	0	1

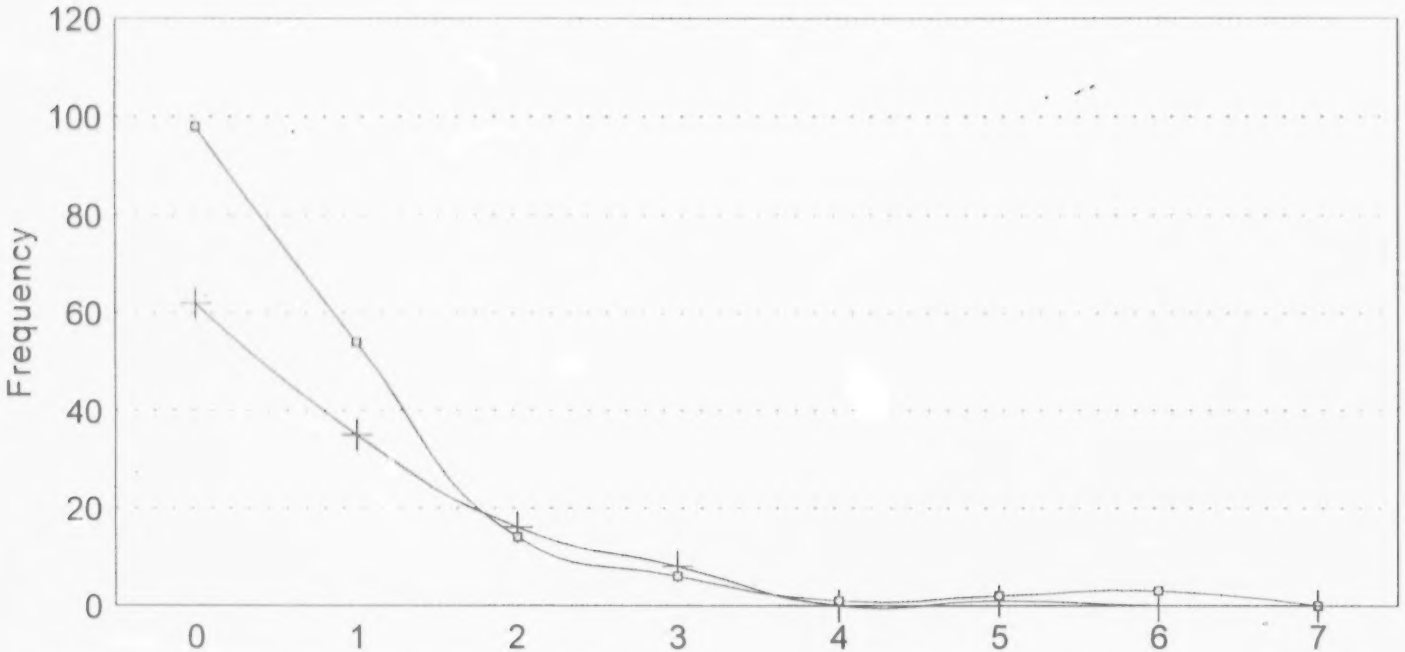
Score (0 - 180 Seconds)

Females Males

Figure 3.15

Alphabet/Count (Error)

Frequency Distribution - Raw Score



Females	98	54	14	6	1	2	3	0
Males	62	35	16	8	0	1	0	0

Score (Range 0 - 52)

Females Males

Figure 3.16

Alphabet/Count (Adjusted)

Frequency Distribution - Raw Score

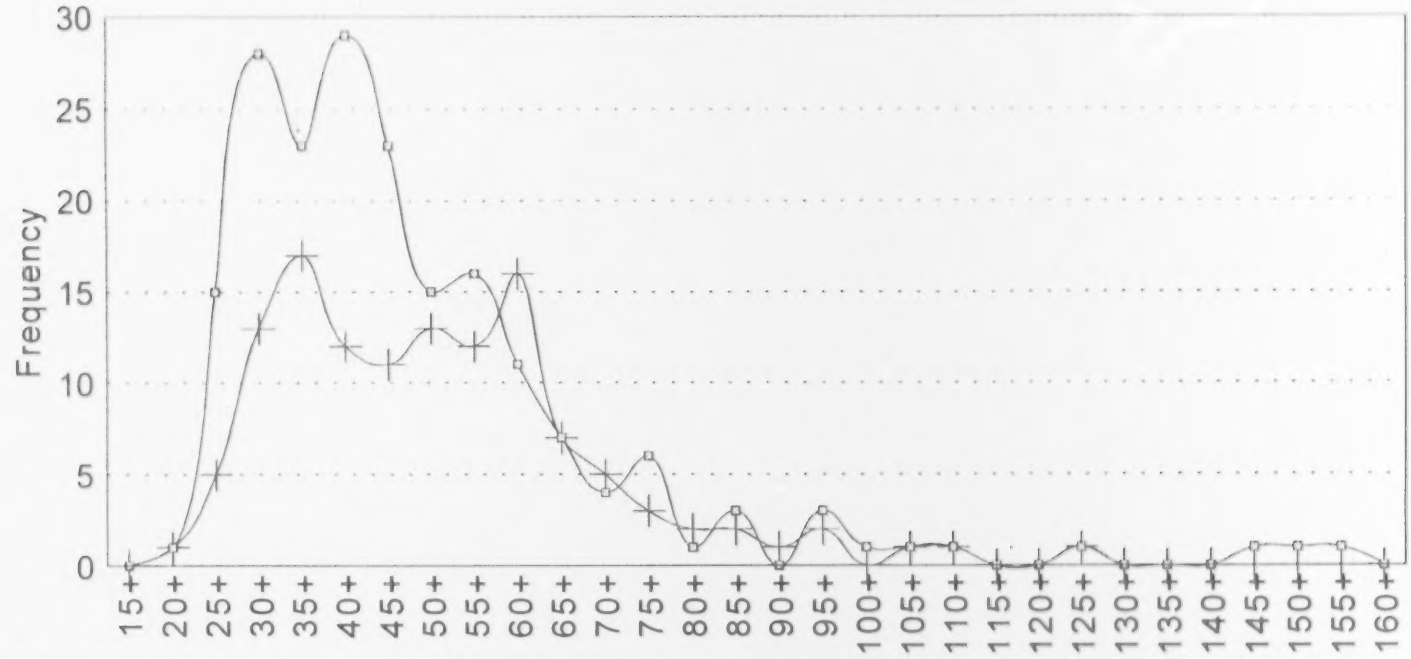


Figure 3.17

Subtract Task (Time)

Frequency Distribution - Raw Score

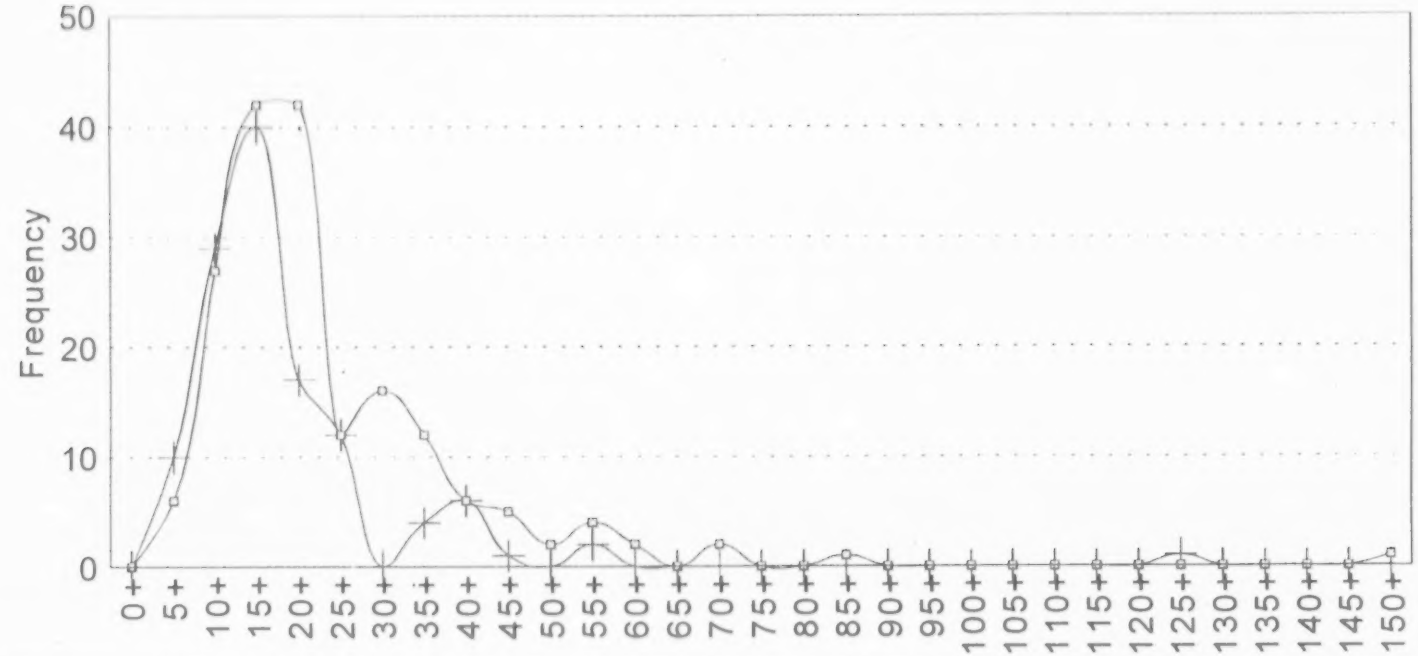
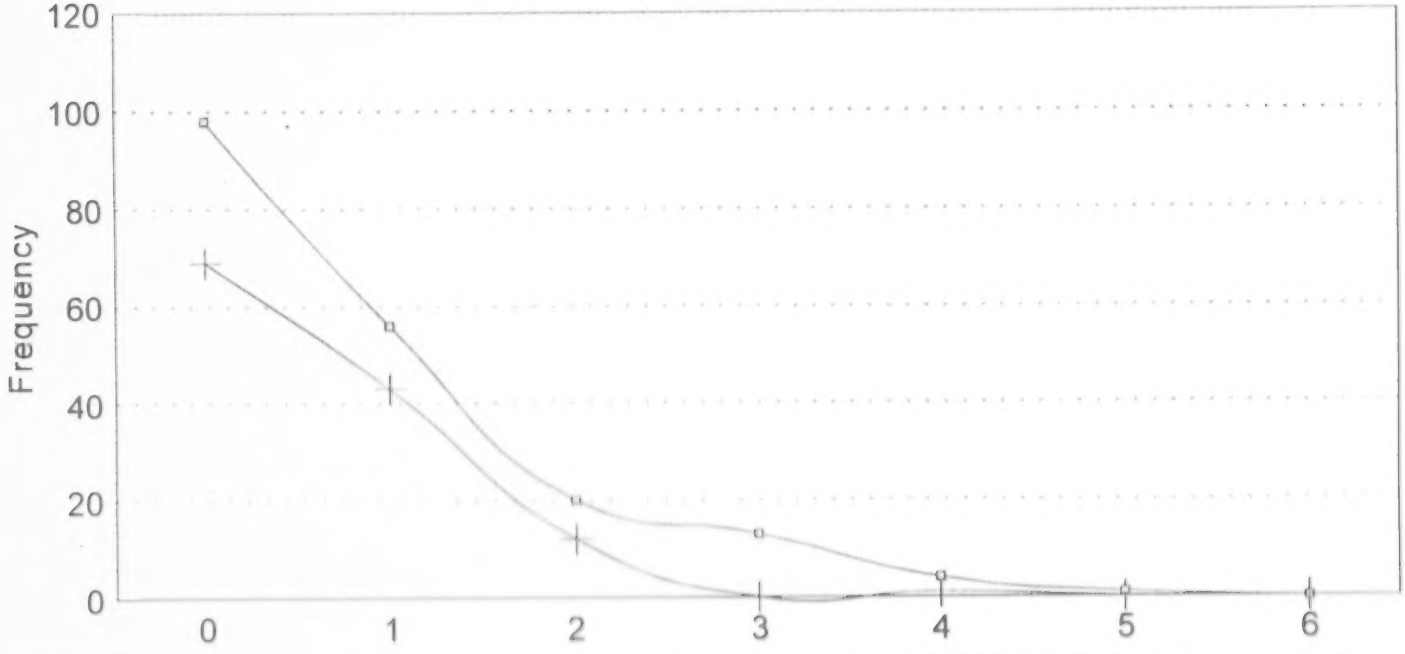


Figure 3.18

Subtract Task (Error)

Frequency Distribution - Raw Score



Females	98	56	20	13	4	1	0
Males	69	43	12	0	1	0	0

Figure 3.19

Subtract Task (Adjusted)

Frequency Distribution - Raw Score

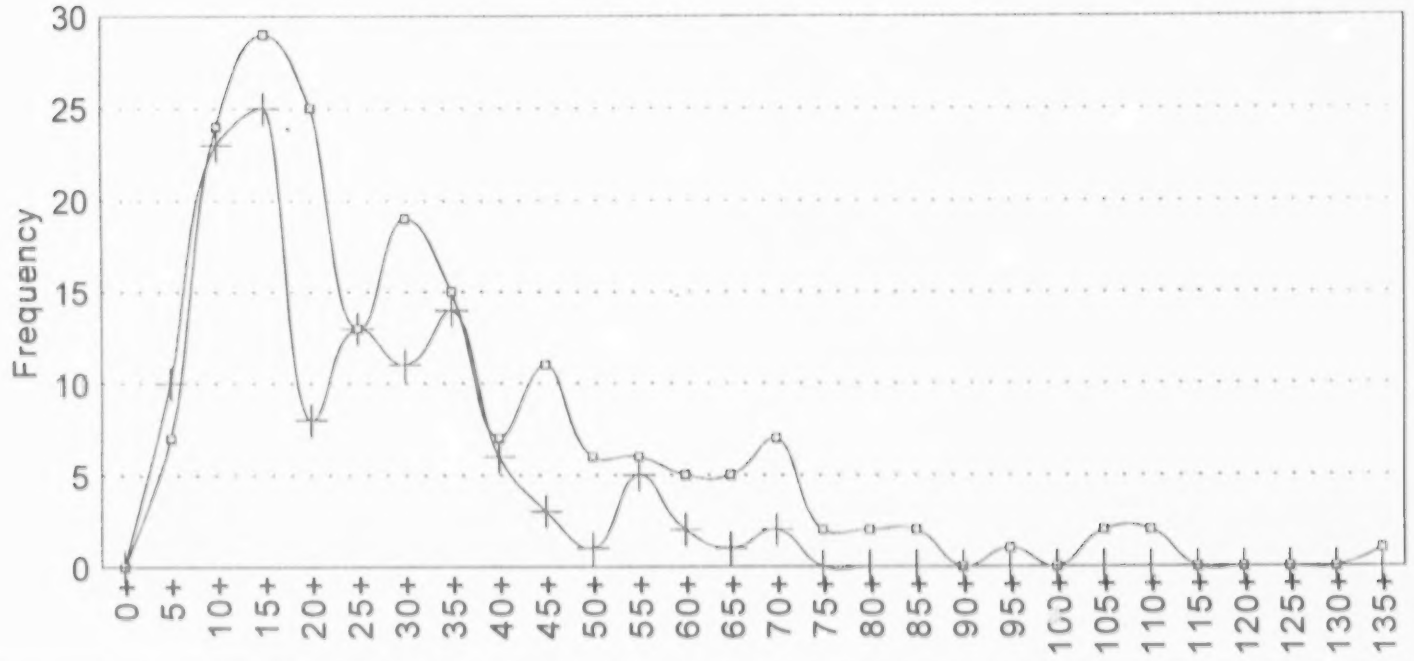
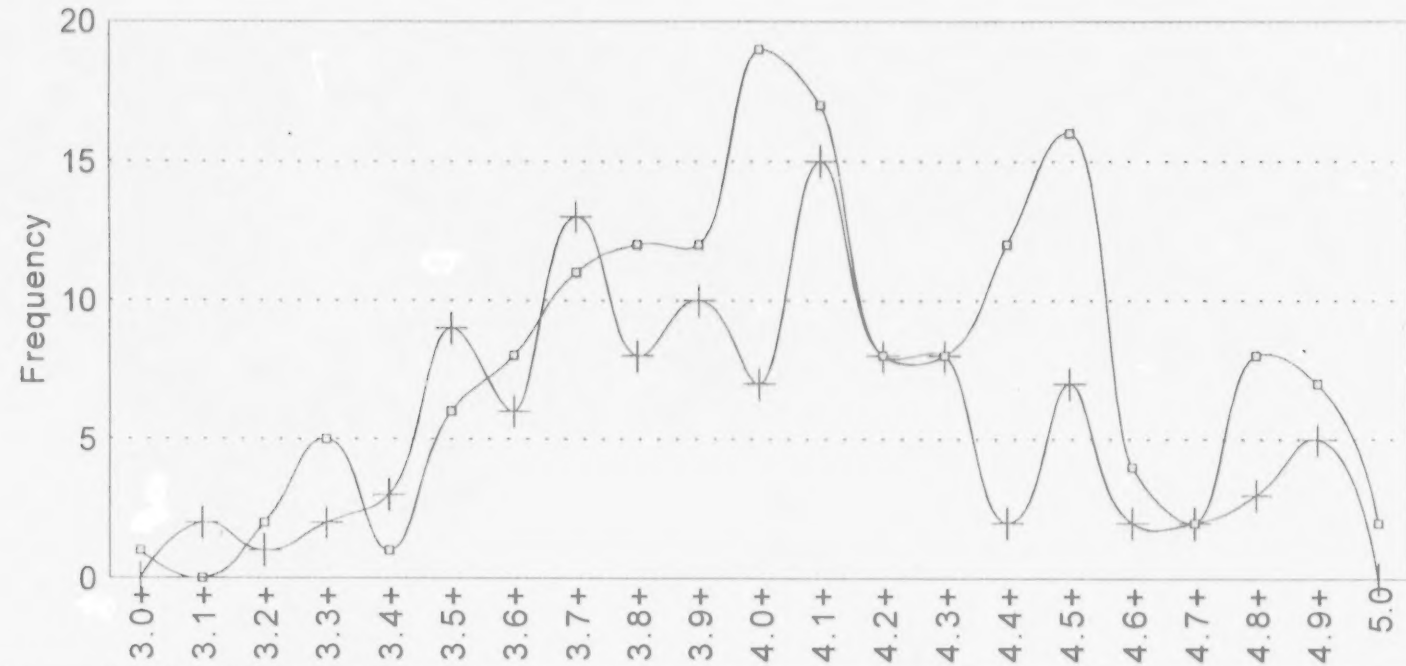


Figure 3.20

Cumulative GPA after Year Two

Frequency Distribution - Raw Scores



Females	1	0	2	5	1	6	8	11	12	12	19	17	8	8	12	16	4	2	8	7	2
Males	0	2	1	2	3	9	6	13	8	10	7	15	8	8	2	7	2	2	3	5	0

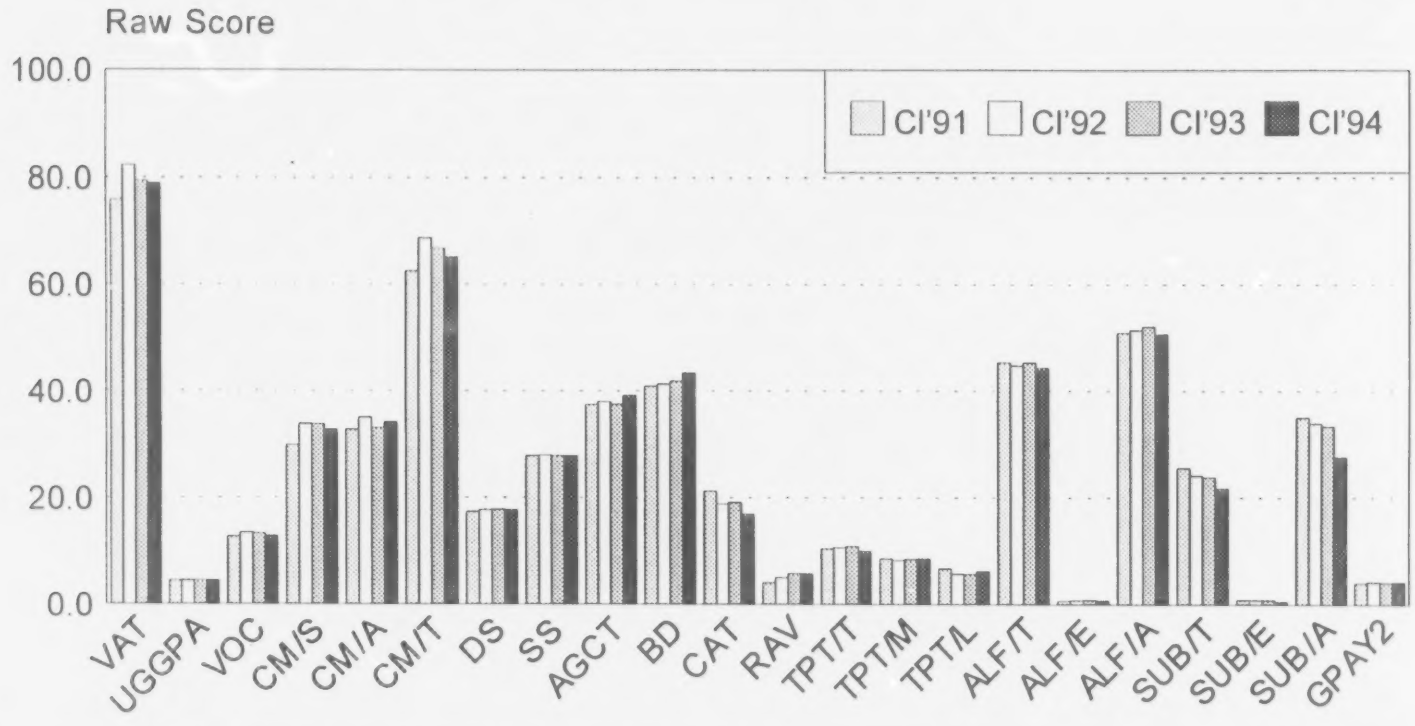
GPA (Range 0 - 5.0)

Females Males

Figure 3.21

Comparison of Class Average Scores

for Each Instrument



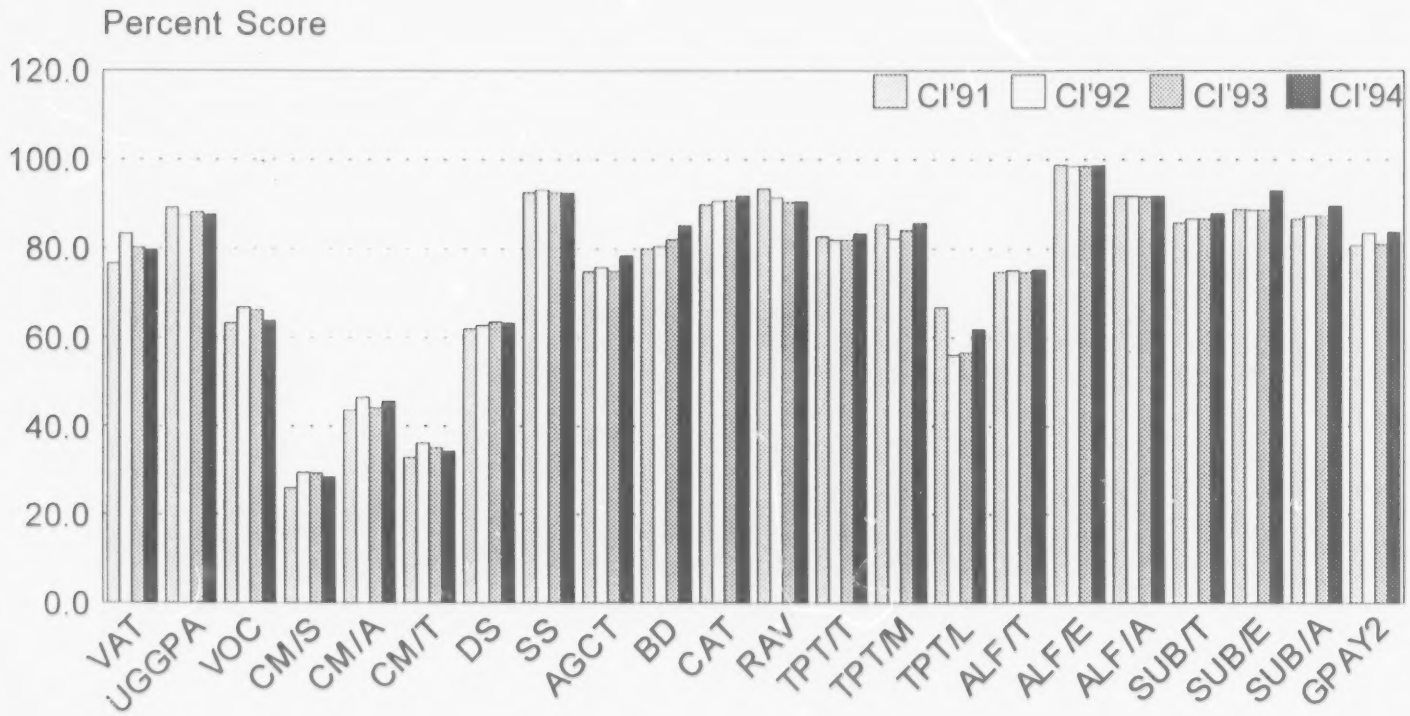
CI'91	75.9	4.5	12.6	29.8	32.7	62.5	17.3	27.8	37.4	40.8	21.2	4.0	10.4	8.5	6.7	45.4	0.6	51.0	25.5	0.8	34.9	4.0
CI'92	82.3	4.4	13.4	33.8	34.9	68.7	17.7	28.0	37.9	41.3	18.8	5.0	10.6	8.3	5.7	44.9	0.8	51.5	24.1	0.8	33.9	4.2
CI'93	79.4	4.4	13.2	33.7	33.0	66.7	17.8	27.8	37.5	41.8	19.1	5.8	10.9	8.4	5.7	45.4	0.8	52.1	23.8	0.8	33.3	4.0
CI'94	78.9	4.4	12.7	32.7	34.1	65.2	17.7	27.8	39.2	43.5	16.9	5.7	10.0	8.6	6.2	44.5	0.7	50.8	21.7	0.5	27.6	4.2

Instrument

Figure 4.0

Comparison of Class Average Scores

for Each Instrument



Cl'91	76.7	89.2	63.2	25.9	43.6	32.9	61.9	92.6	74.8	80.0	89.8	93.4	82.7	85.5	66.8	74.8	98.8	91.8	85.8	88.9	86.8	80.8
Cl'92	83.3	87.4	66.7	29.4	46.4	36.1	62.7	93.2	75.8	80.5	90.7	91.5	81.9	82.3	56.0	75.1	98.6	91.8	86.8	88.8	87.4	83.5
Cl'93	80.2	88.2	66.2	29.3	44.1	35.1	63.5	92.7	75.0	82.0	90.8	90.4	81.9	84.1	56.6	74.8	98.5	91.7	86.8	88.8	87.4	81.0
Cl'94	79.7	87.7	63.7	28.5	45.4	34.3	63.2	92.5	78.3	85.2	91.9	90.5	83.3	85.8	61.8	75.3	98.6	91.9	87.9	93.0	89.6	83.7

Instrument

Figure 4.1

Comparison of Gender Average Scores

for Each Instrument - All Students

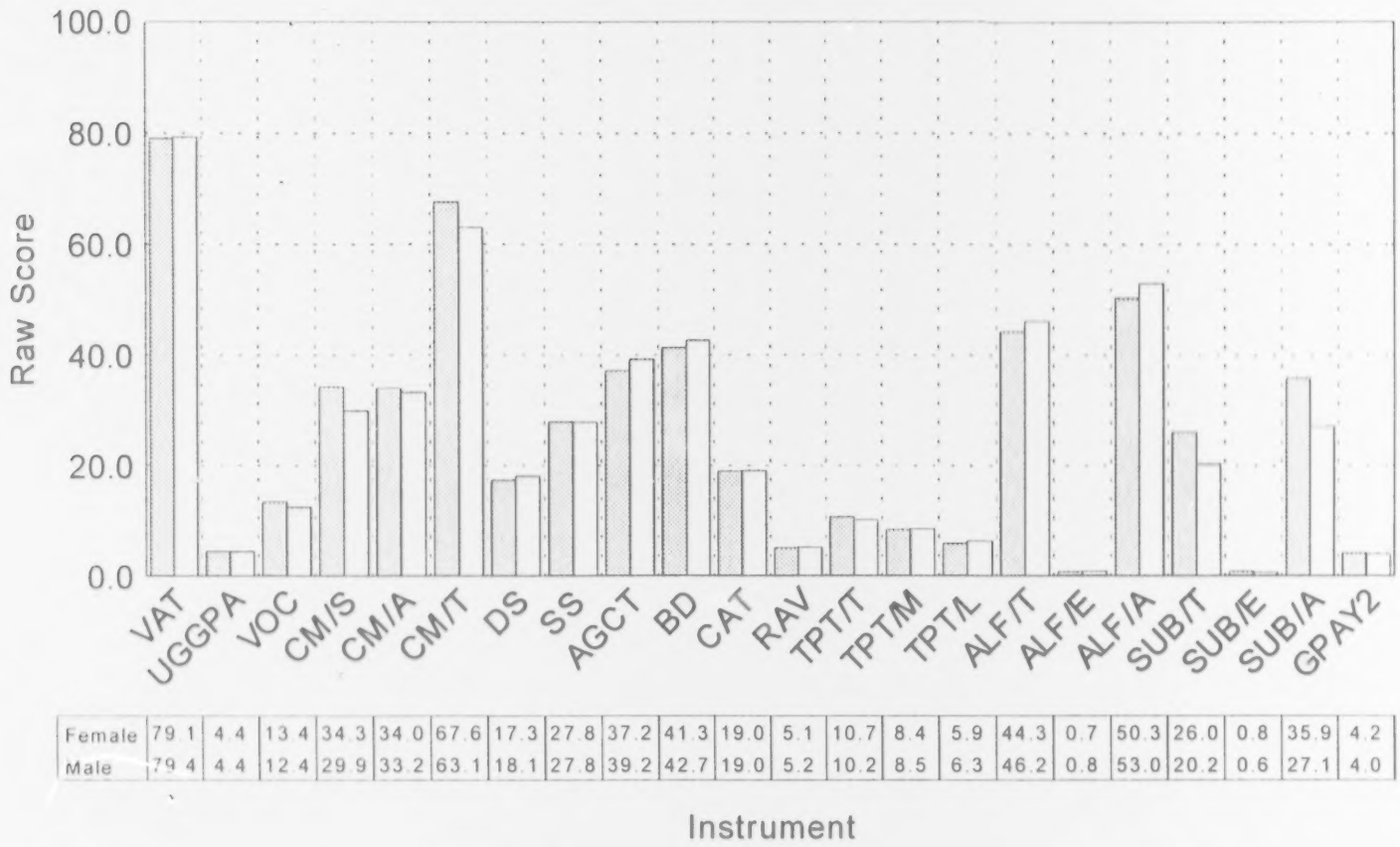


Figure 5.0

Comparison of Gender Average Scores

for Each Instrument - All Students

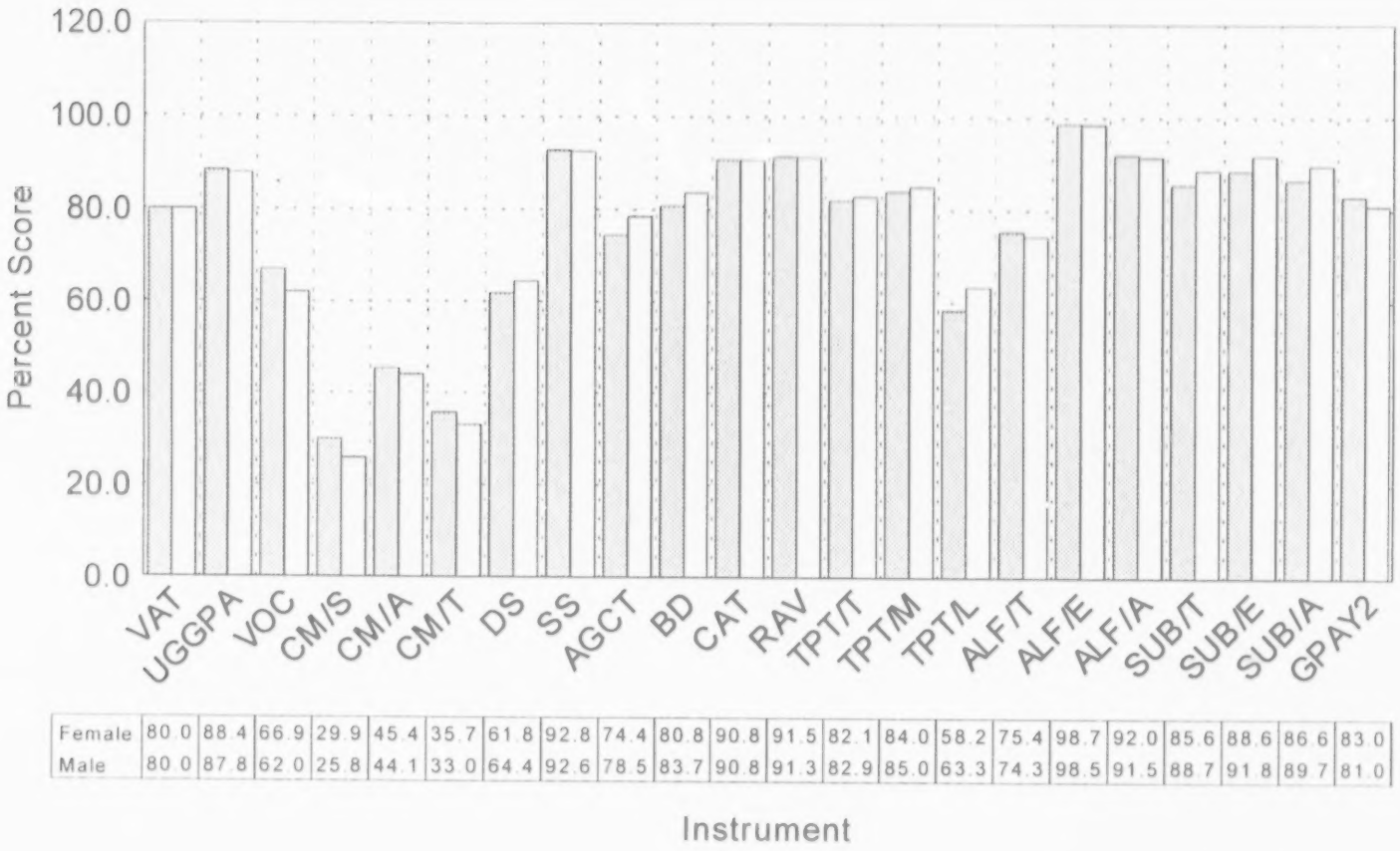


Figure 5.1

Multiple Instrument Comparison

Range and Average Percent Scores - All Students

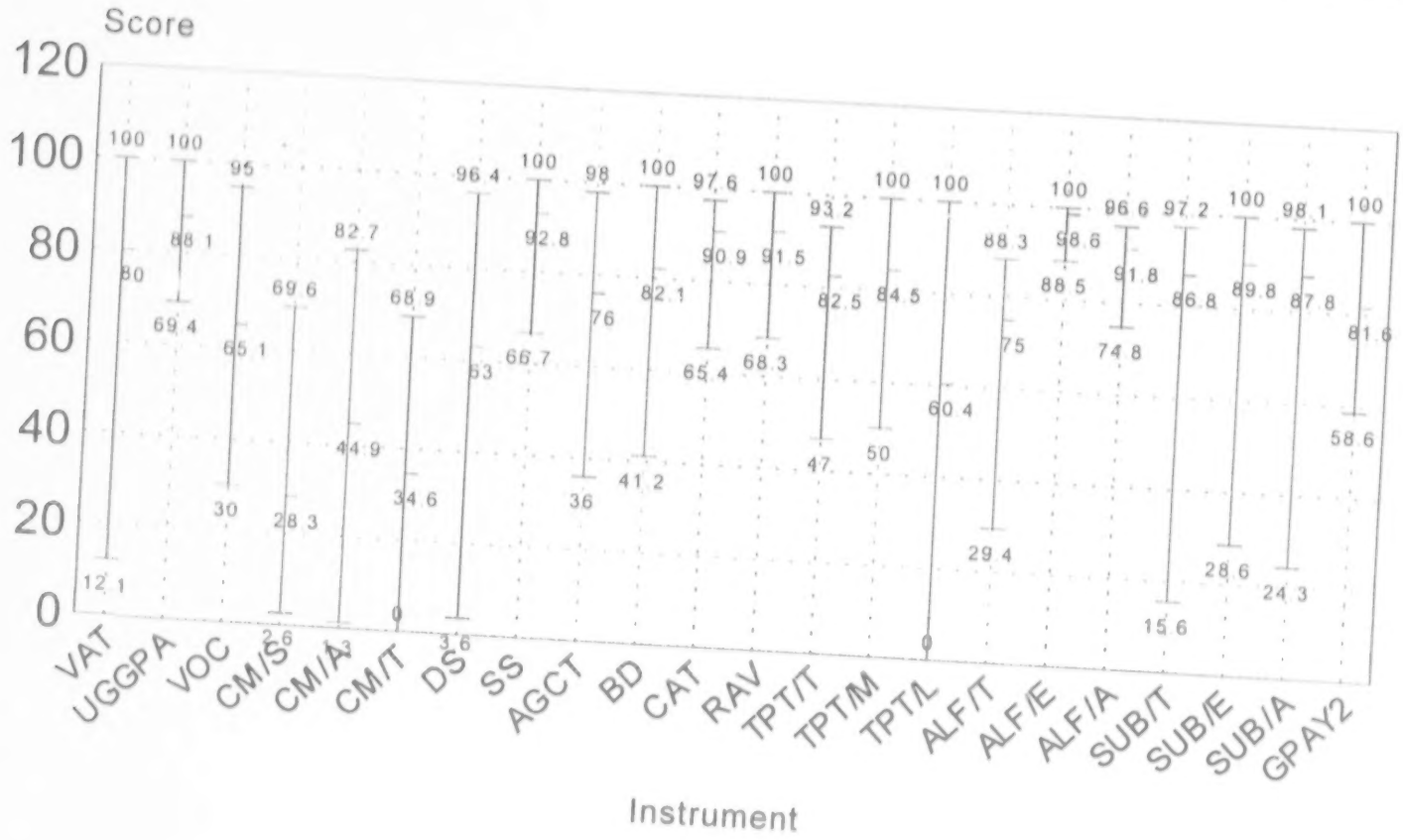


Figure 6.0

Multiple Instrument Comparison

Range and Average Percent Scores - Female Students

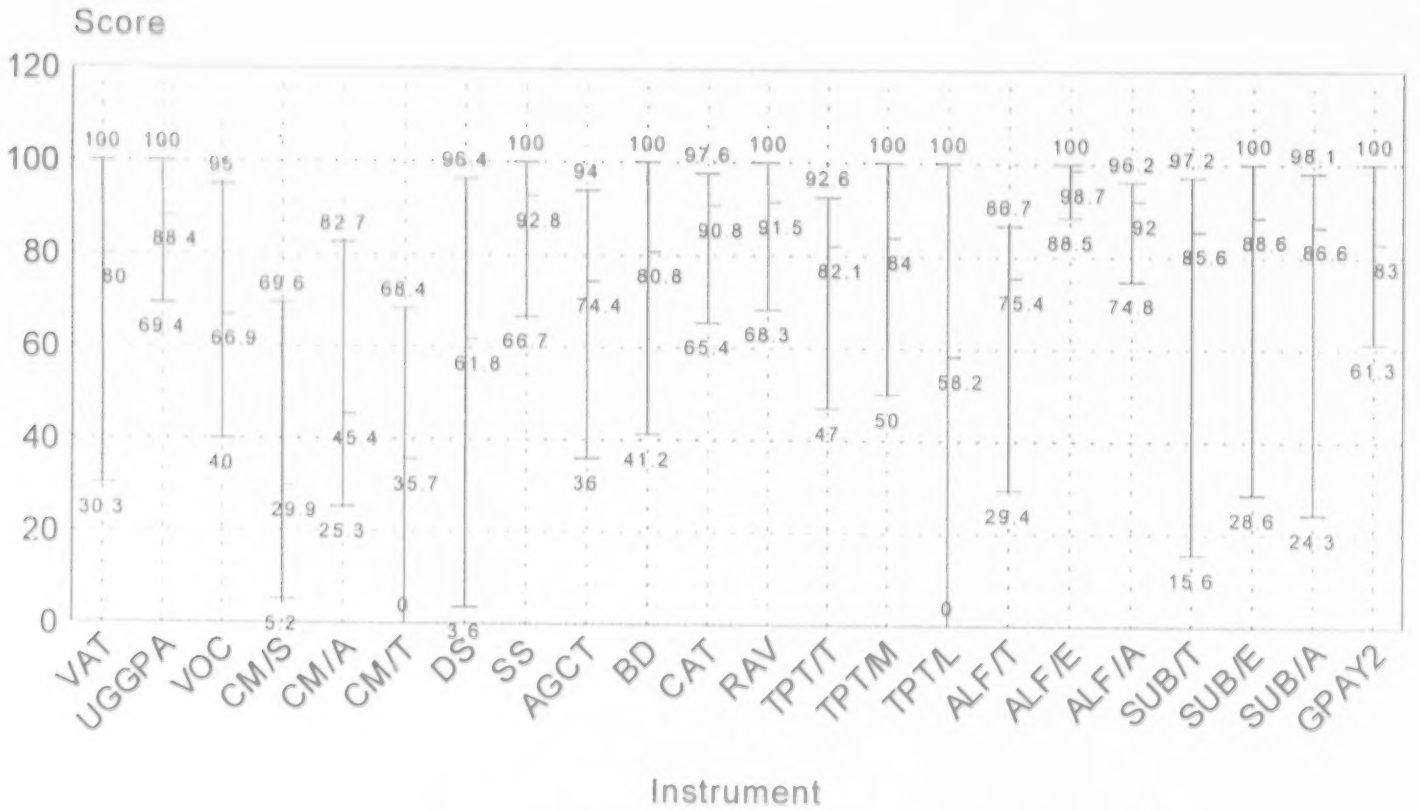


Figure 6.1

Multiple Instrument Comparison

Range and Average Percent Scores - Male Students

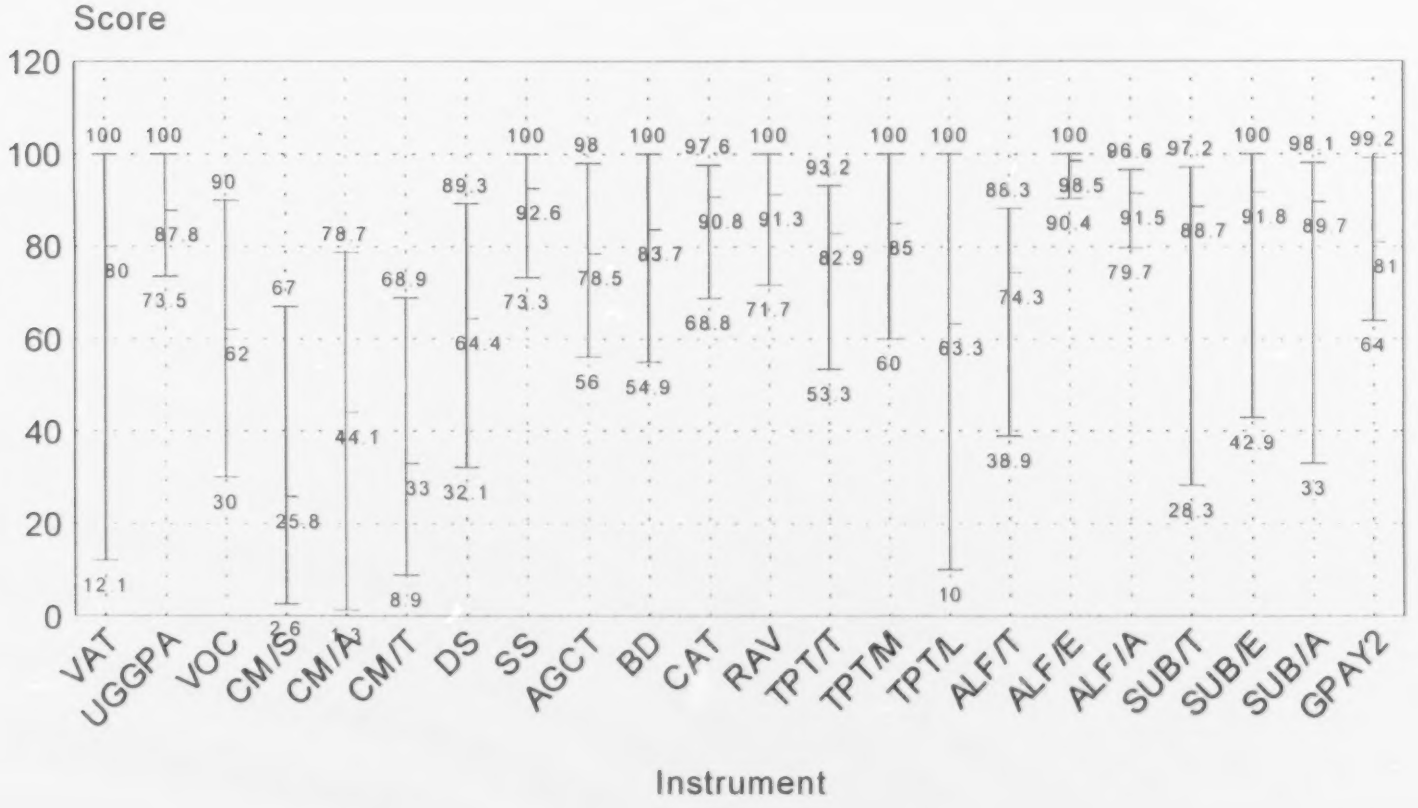


Figure 6.2

OBS 2096

Test Score Profile

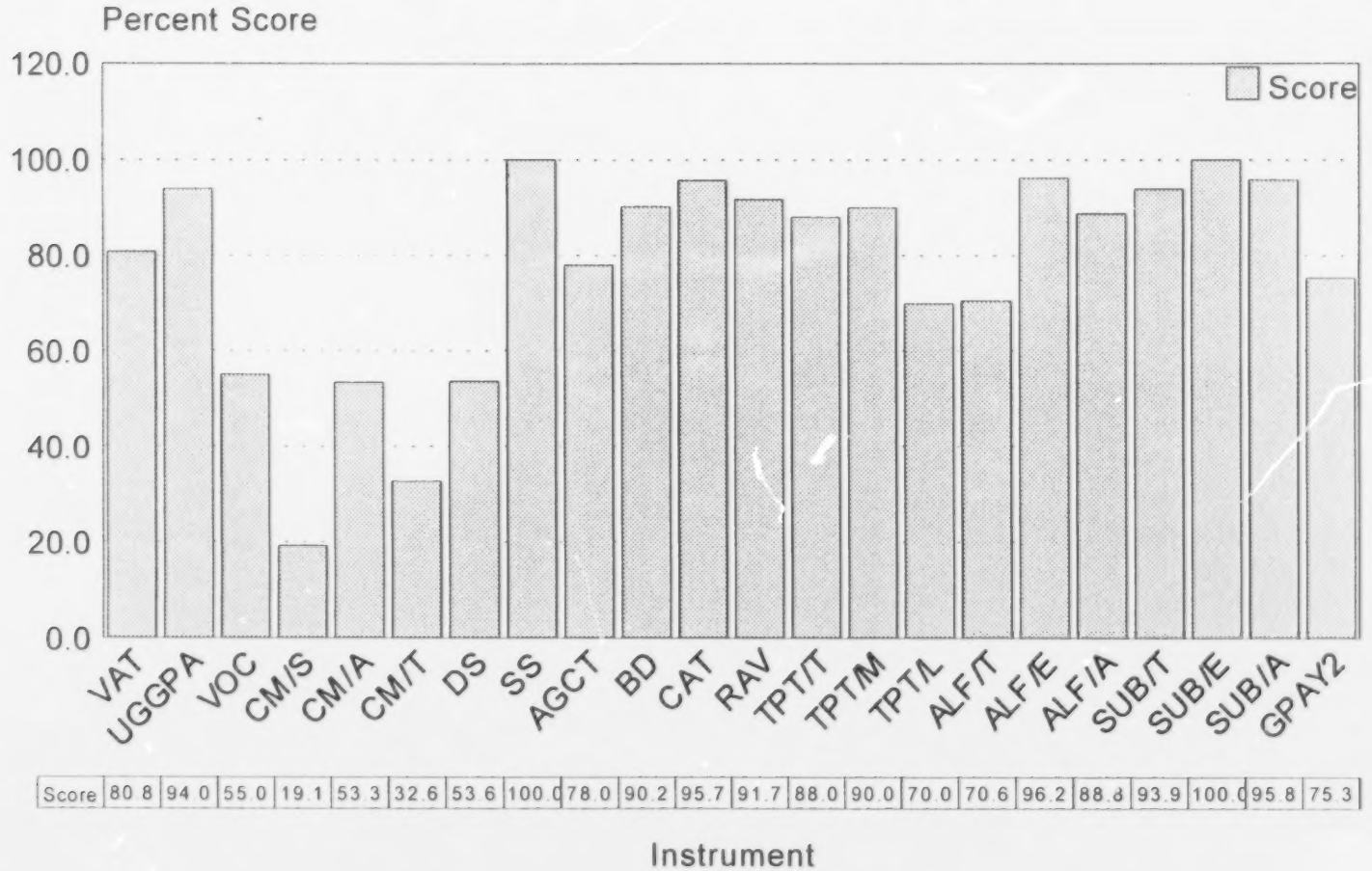


Figure 7.0

OBS 2059

Test Score Profile

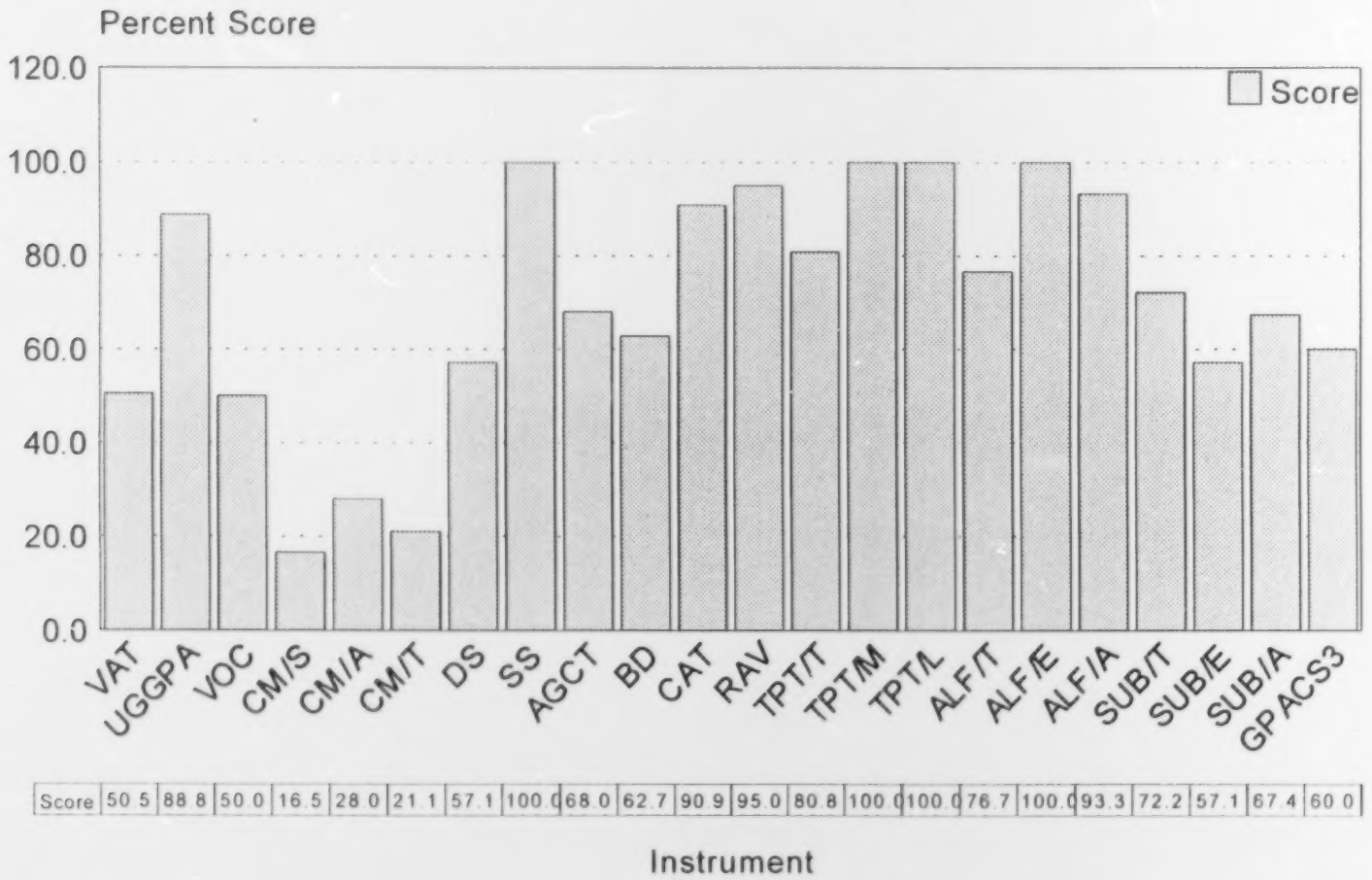


Figure 7.1

OBS 2076

Test Score Profile

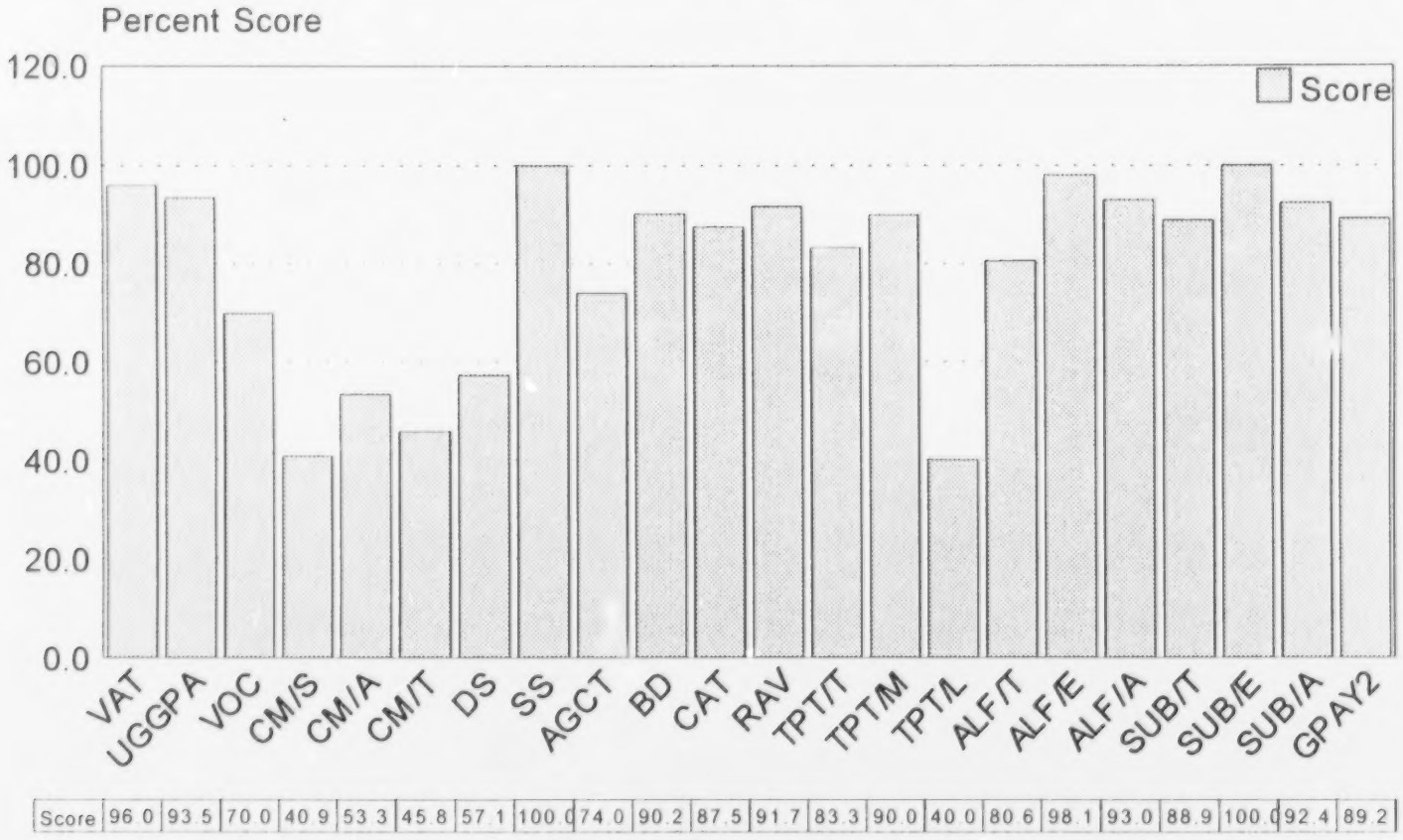


Figure 7.2

OBS 2124

Test Score Profile

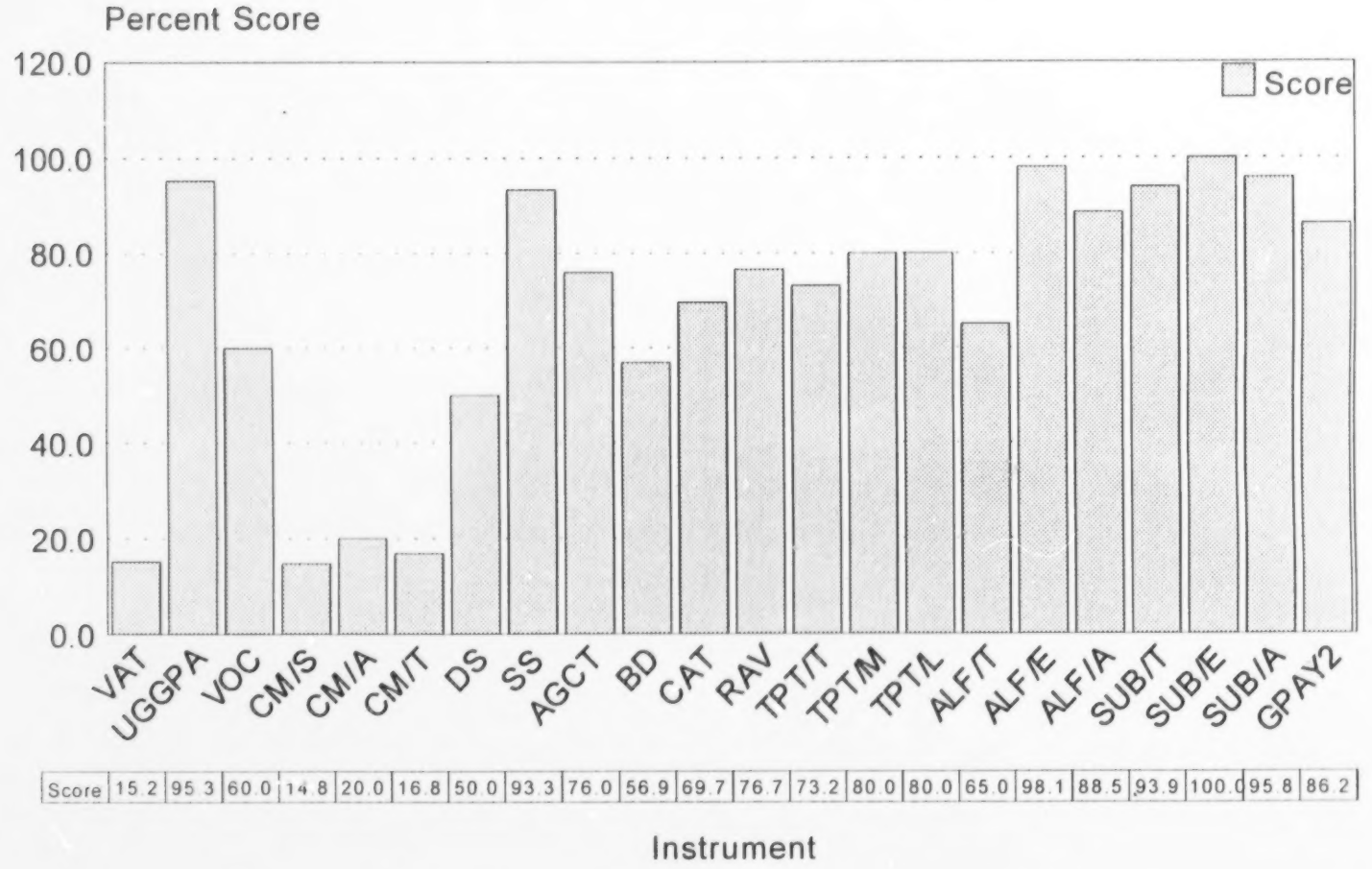


Figure 7.3